GAS JOURNAL, DEC. 27, 1944

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ANOTHER war year has gone by, marked by crests of optimism and troughs of pessimism regarding the end of hostilities. To the extent of twelve months we are nearer the end of international battering in Europe. "Starlight" has given place to "moonlight," the black-out to dim-out. In common with many others we are neither qualified nor prepared to prophesy anything about the time of return to peace. Like all others we hope that the answer is "Soon," and that victory will spell reinvigoration of the Gas Industry to enable it to assume a peacetime role in the service of nation and community far more prominent and far greater than it occupied in the years of peace prior to 1939. Throughout 1944 it has strained all effort in national service; obstacles have been overcome, and as we approach 1945 there is no flagging of spirit. As far as enemy activity is concerned during the year, the gas undertakings in Southern England have borne the brunt of the aerial fray, but they were hardened and experienced, knew what co-operation meant in time of stress, and showed all their former resourcefulness. If "business as usual" is maldescription, "gas output as expected" is apt enough. It may fittingly be recorded that at no time during the fifth year of war has the Industry failed in the demands made on it. This is surely a point to be remembered on the dawn of 1945; when the time comes for the unfolding of the story of the Industry's service in World War 2, the tale will not be a mean one.

Already, in fact, the veil is being lifted to some extent. As example, this month we have been able to give a full account of the part played by the Industry in providing hydrogen for the balloon barrage. Starting from scratch in 1940 the output of hydrogen by gas undertakings increased in a truly astonishing way. Up to the end of September last the Industry had supplied nearly 2,000,000,000 cu.ft. during a period of intensified demand for gas for more ordinary national services. Again, only last week our pages recorded the ordeal of four gas undertakings on the South-East Coast; how through four and a half years of grave anxiety and unprecedented difficulty, amid shells as well as bombs, these undertakings, except for the briefest of periods measured in hours, have supplied their communities continuously with gas. This front line story of endurance, of the seemingly impossible cheerfully achieved, is inspirational, and it reflects the spirit of the Gas Industry as a whole, from top to bottom, at a time of national emergency. It demonstrates, too, that co-operation is essential to the surmounting of difficulties, and it is an unmistakable pointer to the future in this regard.

That is one side of the picture, and it is bright and encouraging. The other aspect is to what extent the Industry has consolidated its ranks in common purpose, to what extent it intends to move forward in unity. And in this regard it is difficult to discern much advancement during the past twelve months. Perhaps we are wanting in patience. The B.G.F. Planning Report of 1943 has, of course, gone forward to the Ministry of Fuel's Committee of Enquiry of 1944, and other reports have been prepared for the consideration of the Committee. In the meantime it does seem that the ambling rate of expansion which characterized the Industry's progress during the years prior to the war has not been quickened. We realize that the year about to close has meant for the Gas Industry a continuing struggle with problems, particularly of labour and supply, with difficulties which inevitably became more acute as the war lengthened. Without question the Industry has proved more than able to withstand the strain of another war year, and it can regard its efforts in national service with legitimate pride. But to what extent, we wonder, has there been change in the Industry's outlook, the while, in the same period and under the same stress of immediate difficulty, other industries would appear to have so many concrete proposals regarding post-war activity, and are with such confidence visualizing expansion on the grand scale? To what degree is there real unanimity in the somewhat sketchy plans and proposals put forward regarding the place which gas should occupy in future fuel policy? How far, in brief, have talk and discussion cancelled out during the past year? Such questions seem to us germane. But let us pass on to consider what has demonstrably been done during 1944.

Coal

THE coal position has remained a constant preoccupation. In the early part of the year it showed a rapid deterioration owing to strikes which not only preceded, but followed, the Porter Award, and the outlook was serious—in some cases extremely so. Fortunately, owing in great measure to the representations of the Public Utilities Coal Committee of the Conjoint Conference of Public Utility Associations, the interests of gas, as well as of water and electricity, were to some extent safeguarded by the action of the Ministry of Fuel and Power, who, recognizing that these vital utilities must be kept going, diverted to them some of the coal intended for industrial and household use. At the same time, further economies in the use of fuel were put into practice by gas undertakings, and to that end there was a considerable increase in the use of carburetted water gas. None the less, the situation, though slightly better than at one time seemed probable, is still difficult, and not rendered less so by the inferior quality of coal often supplied.

But if coal has fallen off both in quantity and quality, the price exacted for it has notably increased. The average rise of 3s. per ton for all classes of coal authorized as from Feb. 1 was followed by another of 4s. per ton on Aug. 1. In both cases strong protests were made against the increased financial burden thus placed upon undertakings, and it was again pointed out to the Ministry of Fuel and Power that, while general increases in the price of coal had been authorized irrespective of their effect upon the finances of individual collieries, each undertaking wishing to increase its charges for gas consequent on the increased production costs must make a separate application which was normally only granted if the undertaking could not bear the strain. Despite the obvious danger of leaving undertakings in the post-war period in a weakened financial position, the Ministry, having in vain attempted to justify the difference in their treatment of the two industries, declined to issue a Direction authorizing a general increase in the price of gas to recover increased coal costs. They did, however, introduce a simplified form for making individual application. The contention that safeguards should be provided for and protection given to coal consumers regarding matters relating to the price and quality of coal, and that some machinery should be created for resolving the difficulties and disputes arising with suppliers, previously urged upon the Controller-General, was renewed when his successor was appointed. So far, however, no satisfactory arrangement has been reached.

Another difficulty which has faced undertakings and also manufacturers of appliances, has been that of replacing labour wastage. It was partially alleviated by the release by the War Office of a certain number of carbonizing hands, and by the provision, where circumstances were suitable, of prisoners of war. In addition, the Federation of Gas Employers was able, with the help of the Ministry of Fuel and Power, to recruit a considerable number of men from Eire. It cannot, however, be said that the situation has been met, for many undertakings are working short-handed, though future prospects are now less unpromising.

A minor recognition by the Ministry of Fuel and Power of the difficulties above referred to was the issue of a Regulation which relaxed the existing law in regard to deficiency in calorific value and allows undertakers to average the calorific value of their gas, whatever the amount of the deficiency, over the quarter in which the deficiency occurred, and either the preceding quarter (so far as not used to offset a previous deficiency) or the following quarter or both.

Legislation

OF other legislative enactments affecting the Industry in greater or less degree there has been during the year a copious outflow. There were several Directions regarding the Coal Distribution Order and the Control of Fuel Orders, and an Order amending the Control of Coal Tar Order, 1943, which came into force on March 1, was followed by

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the Control of Benzole and Coal Spirit Order, 1944, which came into force on the same day, and consists of 71 Articles and 7 Schedules.

The Bill which ultimately became the Town and Country Planning Act, a measure which in many respects touches the interests of the Industry very closely, was drawn up after an examination of the relations between statutory undertakers and planning authorities by an Interdepartmental Committee set up by the Ministers of Reconstruction and of Town and Country Planning and the Secretary of State for Scotland. Having received from the Committee a Memorandum indicating the matters, including the compulsory acquisition of land and compensation, which it was proposed to discuss, and in response to the invitation to do so, the National Gas Council submitted a Memorandum setting out their views. A meeting with the Committee followed, and when the Bill appeared it was found that on the whole the interests of public utilities had been reasonably safeguarded. One or two minor amendments were secured in the House of Commons, but another of greater importance providing for the payment of compensation for mains and cables rendered redundant as the result of the execution of a planning scheme, which was moved on behalf of the Conjoint Conference in the House of Lords, was withdrawn at the request of the Lord Chancellor, who expressed sympathy with the proposal, but said that it would have to be dealt with otherwise than in the Bill.

Many other aspects of post-war planning of vital importance to the Industry have been the subject of the closest study by the national bodies during the year, and have involved an immense amount of work.

Post-War Planning for Gas

WITH the Report on the Planning of the Industry in the hands of the Minister of Fuel and Power, the British Gas Federation might have been expected to have more time to give to working out the question of internal planning, but the two had to be studied concurrently, for the Minister intimated that in his view the proposals in the Report regarding legislation and integration did not establish any clear basis on which the Government might decide a policy, and that, in consequence, he was appointing a small Committee to discuss further the future organization of the Industry. As soon as the Committee was formed, under the Chairmanship of Mr. Geoffrey Heyworth, and its terms of reference—which comprised the reviewing of the structure and organization of the Industry and advising as to the changes necessary in order to develop and cheapen gas supplies—were published, the work of preparing evidence to be laid before it was begun. This is being done, not by the British Gas Federation, which is a co-ordinating body, but by each of the constituent bodies separately, while by mutual agreement the Gas Advisory Committee of the National Gas Council is acting as a liaison between the Committee and the Industry. The written evidence, which, in accordance with the invitation of the Committee will, where necessary, be supplemented by oral evidence, has now been completed.

While the further discussion of the Post-War Planning Report desired by the Minister will thus be secured, it has not been found possible, despite correspondence and interviews, to obtain the full co-operation of the Association of Municipal Corporations. A suggestion that the Association should appoint representatives to the Council of the British Gas Federation was regarded by the former as desirable, but after considerable negotiation the proposition was found to be impracticable. In regard to technical matters, however, it was agreed that collaboration by the two bodies was to be desired, and that ways and means of making it effective should be discussed.

The difficult and arduous work of the Committee set up to draft the constitution and rules of the proposed British Gas Association, which will effect the re-casting of the existing structure of the Industry's national bodies, was continued during the year, and, though not yet completed, has made useful progress. The first draft, having been altered and modified in the light of criticisms and suggestions received from District Organizations in all parts of the country, now commands a large measure of agreement, but various points of detail still remain to be dealt with. One problem which faced the Drafting Committee and has not so far proved capable of solution is that of fitting the Society of British Gas Industries in to the proposed framework of the Association. While the interests of the supply and of the manufacturing sides of the Industry are in many respects common, and there is a strong mutual desire to work in complete harmony, the composition and functions of the Society differ so fundamentally from those of the bodies representing the supply side that it is very difficult to create an organization which could in all cases represent both satisfactorily.

Another Committee whose work has proved equally difficult and arduous is that set up by the Central Executive Board of the National Gas Council towards the end of 1943, to consider the form and nature of the gas legislation deemed necessary to further the progressive development and expansion of the Industry. The Committee's Report was submitted to the Central Executive Board in July, and deals comprehensively with the domestic legislation pertaining to gas, with references also to such legislation of a more general character as affects the Industry. The Report, after having been circulated for comment and criticism, was considered and approved by the Central Executive Board subject to the excision of certain matters which were regarded as more suitable for inclusion in the evidence which the Evidence Committee above referred to was preparing for submission to the Committee set up by the Minister of Fuel and Power. Thus amended and in slightly altered form it will be submitted to the Minister.

Housing

EVEN more immediately pressing than the matters already mentioned are those relating to the fuel services to be provided in houses to be built under the housing programmes—both emergency and longer term—which are being sponsored by the Government. The three Ministries directly concerned—Works, Health, and Fuel and Power—are all interested in seeing that the most efficient and economical fuel-using equipment is provided, and realizing that there would be requests for information regarding the services which gas could render, the Post-War Planning Committee at an early stage set up a number of committees to deal with various aspects of utilization. These have worked side by side with existing committees set up by both the B.C.G.A. and the Institution, and have done much useful work, including collaboration with committees set up for similar purposes under the auspices of the Ministries mentioned.

Various proposals have been put forward regarding the provision of machinery to co-ordinate the work of the Industry's committees, and tentative steps have been taken to meet an undoubted need, but completely satisfactory arrangements have not yet been made, though they are under active consideration. The work already done and now being done covers a very wide range of subjects, technical and otherwise. Data on fuel usages for many purposes have been collected and assessed; the availability of the necessary appliances in their most up-to-date form has been ascertained; recommendations to the Government regarding fuel policy in general, and in relation to housing schemes in particular, have been made; and many other matters having in view the extension of the scope and efficiency of consumer service in all its aspects have been studied.

Many examples of what has been done might be given. Thus, in the early part of the year a deputation met the Parliamentary Secretary of the Ministry of Works for the purpose of explaining the contribution which the Industry could make to the efficient and economical working and comfort of the houses to be built under Government auspices and by local authorities. Again, when two of the demonstration houses at Northolt were earmarked for the Industry in order that it might show the services which it could offer, decision was taken as to the nature of the installation in each. The supply of post-war appliances rendered difficult on the one hand by the shortage of material and labour, and on the other by the Government's requirement of a high degree of standardization coupled with low cost and maximum efficiency, was carefully considered in conjunction with the S.B.G.I., and ways and means of meeting the demand to the fullest possible extent have been agreed.

The Institution of Gas Engineers

THE year has been one of many difficulties, particularly from the point of view of travelling, and by reason of the flying bomb attacks upon the capital and Southern England, but in spite of these difficulties the Institution has been able to continue, actively and without interruption, its professional, educational, and technical work. The Council and the Technical Committees have met regularly throughout the year, except during the opening stages of the invasion of Europe, when travelling was particularly undesirable. The Emergency Panel of the Council dealt with special problems and matters of immediate urgency during this period.

Membership has continued to increase, there now being 1,900 members, compared with 1,874 at this time last year. It is with great regret that the death is recorded, during the year, of fifteen members, including Mr. A. E. Broadberry, who was President in 1916–17. The number serving with H.M. Forces is now 127, and four are known to have been killed on active service.

Collaboration with Government Departments has been maintained through the various Technical Committees and, in this connexion, the past year has seen great activity. As examples of this collaboration may be cited the work of the Gas Installations Committee and of the

Codes of Practice Sub-Committee with the Ministry of Works in the matter of post-war housing; the efforts made by the Co-ordinating Committee of the Gas Engineering Advisory Boards to save fuel by improved efficiencies at gas-works and generally to co-operate with the Ministry of Fuel and Power; the liaison between the Ministry of Home Security and the Joint Lighting Committee, particularly in regard to street lighting problems; the co-operation of the Gas-Works Safety Rules Committee with H.M. Chief Inspector of Factories in matters affecting gas-works; and the work of the Gas Education Committee in connexion with the scheme introduced by the Ministry of Labour and National Service and the Ministry of Education for the further education of students returning from service life. There have also been initiated by Government Departments during the year a number of committees to which the Institution has been privileged to submit evidence. Notable examples are the Committee on Higher Technological Education (the Percy Committee), the Special Committee of the Advisory Council on Education in Scotland, and the Committee of Enquiry into the Gas Industry (the Heyworth Committee) set up by the Ministry of Fuel and Power.

Arrangements had been made to hold the 81st Annual General Meeting in Edinburgh in June. This was particularly fitting, as it was the first time for thirty-three years that the engineer of a Scottish gas undertaking had presided over the Institution. It was a matter of profound disappointment to all that it became necessary, by reason of the development of the military situation, to cancel the meeting, particularly as no effort had been spared by the Lord Provost of Edinburgh and by the President, Mr. James Jamieson, and his staff to ensure a successful and memorable occasion. Notwithstanding the cancellation the ballot for the election of honorary members, members, associate members and associates was held as usual, and the Presidential Address, the 81st Annual Report of the Council and other Papers which would have been presented and discussed at the meeting were circulated to members. It is gratifying to record that a number of written contributions to the discussion of the Papers were made. It was also deemed inexpedient to hold an Autumn Research Meeting, and the same procedure was adopted with the Autumn publications.

No awards were made of the Gold and Silver Medals, but the Bronze Medal was awarded to J. A. Tomes (Stourbridge) for his Paper, "Some Effects of War on the Economics of Gas Manufacture and Supply," read at a meeting of the Midland Junior Gas Association on Aug. 26, 1943. It is a pleasure to congratulate the following Members of the Institution who were included in the New Year and Birthday Honours Lists for 1944: K.C.V.O., Sir Harold Hartley (Honorary Member); C.B.E. (Military), Colonel H. C. Smith (Past-President); C.B.E., Mr. Samuel Tagg (Past-President); O.B.E., Dr. J. G. King (Director, Gas Research Board); and, O.B.E., Mr. P. G. G. Moon.

During the year the Council initiated a Careers Sub-Committee under the Chairmanship of Colonel C. M. Croft, D.L., J.P. (Vice-President), to review the whole subject of careers in the gas engineering profession. This Sub-Committee has met on several occasions, and is considering the preparation of a brochure intended to bring to the notice of careers masters in schools and of parents the opportunities for technical careers that exist in the Gas Industry, and so to ensure a steady supply of desirable recruits.

The Library Committee has continued to review the upkeep of the Library, and during the year has been particularly fortunate in procuring a complete set of Gas Acts suitably bound and indexed from 1816–1940. These Acts are available for consultation, and should prove of interest and value to members. It is proposed to continue the series as and when new Acts are published. In addition, many new books have been acquired by presentation and purchase during the year.

The Co-ordinating Committee of the Gas Engineering Advisory Boards has continued to meet at regular intervals to receive and discuss progress reports of the Chairmen. Owing to pressure of work it became necessary for Dr. E. V. Evans, O.B.E., to resign the Chairmanship of the Committee, a decision which was received with much regret. The thanks of the Institution are due to Dr. Evans for his valuable work in initiating, and in his capacity of first Chairman of, the Co-ordinating Committee. His place as Chairman has been taken by Mr. S. E. Whitehead (President), and Mr. C. F. W. Rendle (Redditch) has been appointed Vice-Chairman. The reports of the Gas Engineering Advisory Boards to the Director of the Gas and Electricity Division of the Ministry of Fuel and Power have indicated that, in spite of the increasing age of gas-works plant and of the difficulties of coal and labour, the efficiency of carbonization and of fuel utilization has generally been maintained, and in some instances has increased. During the year there have been many examples of assistance rendered by members of the Boards to neighbouring undertakings in difficulty, and particularly gratifying was an offer on the part of the engineers of Wales and Monmouthshire to devote their annual leave to relieving engineers in the areas suffering most acutely from flying bomb attacks. Fortunately, with the rapid liberation of France, the scale of these attacks diminished, and it was not necessary for gas engineers concerned to avail themselves of the offer, but it was nevertheless greatly appreciated, and is indicative of the fine spirit that prevails throughout the Industry.

The Council of the Institution has appointed, at the request of the Council of the British Gas Federation, a District Heating Committee to consider the principles and practice of district heating and proposals in relation thereto, and their development through the methods of heat distribution which can be provided by the Gas Industry. A full report on the various aspects of the subject is being prepared by the Committee.

The Codes of Practice Sub-Committee and its Drafting Panels have been active throughout the year, and nine Codes of Practice have been prepared which will shortly be circulated by the British Standards Institution, on behalf of the Ministry of Works, for comment. It is believed that in this respect the Sub-Committee of the Institution is well in advance of most of those set up by other professional Institutions. The Codes of Practice so far prepared deal with the following subjects: Gas service pipes, meters and consumers' control; gas installation pipes; gas lighting (single family dwellings); space heating by independent gas appliances (single family dwellings); gas cooking installations (single family dwellings); gas-operated refrigerators; hot water supply by gas; and flues for gas appliances. Other Codes are being considered dealing with domestic laundering and with gas appliances for lighting and heating schools and other buildings. The report of the Gas Installations Committee to the Minister of Works was published by the Ministry in May, under the title "Post-War Building Studies, No. 6—Gas Installations, 1944." A copy was sent by the Institution to every gas undertaking. The Chairmen's Technical Committee has continued to exercise its function of co-ordinating the work of the Technical Committees. The inclusion in the membership of this Committee of the Chairmen of Technical Committees of the Gas Research Board, in addition to the representation of the Institution on the Council of the Board, ensures the closest co-operation between the two bodies.

Education

The number of candidates entering for the examinations of The Institution of Gas Engineers was greater last year than in the previous year, and on the whole the standard showed a marked improvement. This is particularly satisfactory when it is realized that general conditions in wartime are not conducive to study. For the Ordinary and Higher Grade Examinations in Gas Engineering (Manufacture) and (Supply), there were 167 candidates, of whom 107 passed, 22 first class and 5 with distinction. There were 13 candidates for the Diploma Examination, 10 in Gas Engineering (Manufacture) and 3 in Gas Engineering (Supply). Six were successful, of whom 2 submitted theses; these are deposited in the Library of the Institution. No award was made this year of the Charles Hunt Memorial Medals in Gas Engineering.

Many enquiries have been received during the year from students serving in H.M. Forces in connexion with their studies for the examinations of the Institution; a number have been able to continue with these, and some have been successful in passing some of the necessary examinations. Arrangements have also been made through the British Red Cross Society for prisoners-of-war to study for Gas Engineering examinations, and one prisoner has successfully completed the Higher Grade examination with distinction. The arrangement continues with the Ministry of Labour whereby students who are within two years of taking the Higher Grade examination may receive temporary reservation through a certificate issued by the Institution.

The Gas Education Sub-Committee on Employment and Training has collated much useful information on the subject of refresher courses for gasfitters. A number of the larger undertakings are arranging to hold special courses for this purpose when demobilization begins, and in many cases there will be the opportunity for smaller undertakings which have not sufficient resources to institute courses of their own to take advantage of these courses. The Gas Education Committee hopes to be able to give assistance to the smaller undertakings by putting them into touch with suitable courses. Information is now being collected in relation to the training of Gas Engineers whose studies were interrupted by the war or who, on returning from service in H.M. Forces, are in need of a refresher course. The appropriate Government Departments have already initiated financial arrangements whereby assistance in this connexion will be granted to suitable candidates, and applicants seeking such assistance should contact the Appointments Department of the Ministry of Labour.

The Gas Research Board

In the early part of the year the Council of the Board reviewed in detail a comprehensive programme of research, and made certain decisions as to priority of action. The programme is a large one, and such priorities must therefore frequently come under review as new developments and new points of urgency arise.

Despite the difficulties of travel, there have been consistently good attendances at meetings of Council and of Committees during the year. At the Annual General Meeting of the Board in June, Sir David Milne-Watson, Bart., was re-elected President, and Mr. S. E. Whitehead and Mr. F. B. Richards were elected Vice-Presidents. On the Council, Dr. E. V. Evans was re-elected Chairman, and the places of Mr. E. Crowther and Mr. G. Dixon have been taken by Mr. P. G. G. Moon (Bournemouth) and Mr. H. S. Milne (Aberdeen).

Some additions to staff have been made, but, owing to war conditions, still inadequately. Even more necessary and urgent than increase in staff is the establishment of a central headquarters with laboratory facilities, and a search has been made to find a site in the London area for such a headquarters, with sufficient scope for expansion over many years. So far no satisfactory site has been found.

In the meantime the greater part of the work is being prosecuted as before in the University of Leeds, under the immediate supervision of the Joint Assistant Director, Dr. F. J. Dent, and the Livesey Professor, Professor D. T. A. Townend. Laboratory accommodation has, however, been obtained at South Kensington by the courtesy of the Governors of the Imperial College of Science and Technology, and a group of workers is being built up there to deal with problems relating to the utilization of gas, while junior staff is also being trained to form a central analytical section. An active centre of research has now developed at Poole in connexion with the work being done there on the gasification of coal under pressure.

The research programmes upon which it has been possible to concentrate have included those of the previous year on methane synthesis, purification of gases from sulphur compounds, combustion characteristics of gases, distribution of organic sulphur compounds in coal gas, the separation of gases by refrigeration, and the study of radiation and absorption in the infra-red in relation to problems of heating and drying. To this was added in June the second stage of the research on the gasification of coal in hydrogen under pressure. The intermediate-scale apparatus for this has been completed, and has proved very satisfactory from the operational point of view. Data have since been collected on the effect of scale upon the reactions (on the present scale the charge is 300 lb. coal), and research on the increased scale is now active. The results will eventually indicate the form and shape which the process will take when a pilot plant comes to be built.

The Board is indebted to the Woodall-Duckham Company for the care they have taken in constructing the plant, and to the gas undertaking in the South of England which has provided the site and given valuable help continuously during the construction and during the experimental work.

Evaluation of the effect of increase of scale is now being undertaken also in the programmes of research on methane synthesis and the purification of gases from organic sulphur. While fundamental research on both subjects continues, intermediate-scale apparatus is being constructed. The methane synthesis apparatus is now being built, and it will be capable of treating a number of gas streams, each passing at the rate of 6,000 cu.ft. per day. The intermediate-scale sulphur-purification plant will be housed in one of the works of the Leeds Corporation Gas Department, and will treat 50,000 cu.ft. of gas per day.

The survey of the combustion characteristics of coal gas and the distribution of organic sulphur compounds has proceeded rather slowly for various reasons, but the experience gained will now permit of acceleration: so far, four works have been visited, and data have been obtained regarding 15 types of gas. The observations made are proving of considerable interest, and a number of new facts have emerged. Separation of gases by refrigeration will probably be a larger factor in gas manufacture in future, and research on this subject, and especially on the liquefaction of methane for use as a fuel and for gas enrichment, has been in progress throughout the year. One of the research staff is working on this subject under Professor Sir A. Egerton at the Imperial College. The researches on the fundamentals of heating and drying by radiation in the infra-red have now reached the stage where it is possible to apply the results to special problems or materials in order to define the best conditions for treatment, and to provide useful information to those concerned with the development of the manufacture of furnaces for specific purposes.

A new programme on the purification of liquor effluents has now been prepared. The first problems to receive attention have been the removal of thiocyanates and the solvent extraction of higher tar acids from waste liquors. Several solvents have been found to be applicable to the latter purpose.

The Council have felt the need for making an early start with new work on those problems which arise in the utilization of gas. A number of the new staff are therefore working on this section of the programme, and a group has been formed at South Kensington to prosecute work on combustion, burner design, corrosion of appliances, and the preparation of industrial products of the chlorination of methane.

The researches on problems associated with refractories have again been conducted in the Mellor Laboratories under the Director of the British Refractories Research Association, Mr. A. T. Green; the results are reviewed from time to time by the Joint Committee of the B.R.R.A. and the Gas Research Board.

An intelligence section has been started, and is dealing with scientific reports and the indexing and filing of abstracts from current scientific literature. It is proposed to circulate to members a series of information circulars on subjects of new interest; the first of these appeared in August, and dealt with "infra-red" heating.

The Annual Report of the year 1942–43 was published in January. It included an historical survey of the progress of each active research programme from its inception. The Annual Report for 1943–44, which covers the period June–June, will be published early in 1945, and the accounts of research work will deal only with the progress made during 1943–44.

A number of scientific and other papers have been published during the year by the Board and by members of its staff. It is gratifying to record that the Melchett Medal for 1944 was presented by the Institute of Fuel to the Director for his researches on fuel problems, and on the occasion of its presentation he delivered the Melchett Lecture. It is now becoming possible to publish research data in greater detail, and it is intended to present detailed scientific papers during the coming year. These have been introduced by the general summary given recently by Dr. Dent of his researches on the gasification of coal in hydrogen under pressure.

S.B.G.I.

The past year has been the first during the war period in which normal procedure in the Society's affairs has been followed. Full Council elections having been held, the Council has met at regular intervals throughout the year. Mr. Ernest West, who had served as Chairman of the Council since 1939, has given place as Chairman to Mr. R. B. Potter. In the Spring the Society suffered the grievous loss of their Vice-Chairman Elect, Major A. L. S. Wood, and Mr. Lawrence Bratt accepted nomination to that office in his place. Sir Francis Joseph very kindly consented to remain in office as the Society's President.

In May the Government issued a White Paper of the greatest importance entitled "Employment Policy," in which the transition from war to peace was reviewed against the international and industrial background. There would be no problem of general unemployment in the years immediately after the end of the war in Europe. In this transitional period our national problems, though no less difficult, would be different. It would be a period of shortages. Exports would have first priority, essential civilian requirements second, and capital equipment third. After that, and only after that, should we be able, it appears, to think in terms of what we would like to have rather than of what we are going to be allowed to have. The prime concern of the S.B.G.I. is that the productive capacity of its members should be at the disposal of the Gas Industry. Ways and means to this end have been the subject of constant study by the Society's Council during the year. This study and the actions to which it gives rise are not in themselves spectacular, and they strike no headlines, but the Gas Industry can be completely assured that unremitting labour has been devoted to the task, that every call made on the Society for information to enable the Government Departments concerned to take proper account of the Industry's capacity and resources has been promptly and fully met, and indeed that results of value are already being obtained. At the time of writing, the first and only overriding priority is still the successful prosecution of the war, so that results as yet are but a trickle which the coming year should see develop into a stream, even if the flood may yet be some time ahead. "In order to direct the efforts of industry towards the right tasks in the right order," says the White Paper, "it will be necessary to establish certain broad priorities, and to enforce them for a time by means of the issue of licences, the allocation of raw materials, and some measure of control over the labour and staff required for industry." That is the framework into which the activities of the Society's members in 1945 will have to dovetail.

In the transitional period the first priority is export. During the war years the Gas and Coke Oven Industries Export Group, which the Society staffs and administers, has been active in the interests of members. All exports have been the subject of very careful scrutiny by the responsible authorities, but within the bounds of such export business as is permitted, the Group has handled all export orders through their various departmental stages. Restrictions are still severe, but latterly there have been relaxations, small in themselves, but indicative nevertheless that the tide, having passed its ebb, is beginning once more to flow. Prior to the war the value of exports effected by the Society's members exceeded £1,000,000 annually, leaving out of account large contracting projects which from time to time were undertaken for the gas and coke oven industries. There seems no reason to doubt, starved as our normal markets have been of the flow of exports from this country during the war years, that in the early post-armistice years the Society's members should be able to make a useful contribution to the flow of international trade.

The second priority in the transitional period is essential civilian requirements. It can hardly be questioned that the maintenance of a great public utility service ranks as a second priority. Immediately before the war there was general recognition of the capacity of the Society's members to serve the Gas Industry well and, through the Industry, the consumer equally well. Development work inevitably, and as is now generally recognized, has been virtually at a standstill during the war years, but the best that 1939 could produce, good as it was, will be available, and such delays as there may be in a return to the pre-war level of production will not lie at the door of the manufacturers, insistent as are their requests through the Society to the competent authorities for the necessary facilities to enable them to return to that level. Granted the imperative need there will be in the early post-armistice years for plant and capital equipment for the Gas Industry, and for equipment and appliances in connexion with the housing and re-housing of the population, and granted the desire of the Society's members to meet those needs, it remains but for the manufacturers to be provided with the tools for the job to be undertaken.

The Society during the year has continued to maintain the closest possible contact with the various Government Departments responsible for the exercise of control over raw materials and the means of production. The machinery for the exercise of control established in the early war years is virtually stable, and the problems which have arisen to be dealt with during the year have concerned primarily cases of hardship in particular circumstances. A very fair degree of success has been achieved in a number of directions where the interests of members have been in question, for it is evident that despite the necessity for subordinating everything to the prime objective of putting the country's war requirements first, by and large the essential calls by the Gas Supply Industry on the services of the Society's members have been met. Wartime control is, however, but a means to an end and not an end in itself, and the fact that the Gas Supply Industry is even in this sixth year of war relatively so well served is due first and foremost to the ability and ingenuity with which the Society's members have met the calls made on them within the framework of Government control and regulation. The contractors and manufacturers at the same time have made a direct contribution to the war effort of impressive dimensions.

Elsewhere in this issue reference has been made to various outstanding indications of the development of Government policy so far as it affects the Gas Industry, but it is opportune here to examine the reaction of the S.B.G.I. to the two very important Committees appointed during the year by the Minister of Fuel and Power—the Committee of Enquiry into the Gas Industry, and the Fuel and Power Advisory Committee. The latter Committee is charged to consider and advise upon certain questions concerning the development and utilization of the fuel and power resources of the country in the national interest. The functions of each of the fuel industries are, it may be assumed, to be reviewed in the light of the community's overriding need of a policy for efficiency in fuel utilization, and the starting-point of this policy must be an attempt to balance the growing and competing demands which will be made upon the nation's dwindling supplies of unmined coal. The belief of the members of the S.B.G.I. is that the twin fuels of the Gas Industry, gas and coke, offer an unequalled over-all service, whether looked at from the viewpoint of national fuel conservation, cheapness, or convenience to the consumer. The Society's members are very conscious of their community of interest with the undertakings, and indeed it is a matter of vital concern to them that the Industry of which they form part should prosper in the service which it seeks to render to the consumer. During the year the efforts of the Society have been constantly and assiduously directed to achieve such a position as an Industry in relation to the transition from war to peace as will enable its individual members to make their own contribution to the welfare of the Gas Industry as effective as possible.

B.C.G.A.

THE year is regarded by the Association as the turning-point of its war efforts. In spite of shortage of staff and the many ups and downs of national events, it decided to expand its activities in every direction in order to be ready to put a full publicity service into operation immediately hostilities cease.

The most important of its activities has been kitchen planning under the Domestic Heat Services Committee. This Committee, originally a sub-committee of the B.C.G.A. Executive, has now passed under the direction of the British Gas Federation. However, its Publicity Panel remains a Sub-Committee of the B.C.G.A. and the Association's officers have been responsible for carrying out the work with the able assistance of editorial agents appointed to help in the task. The Press and the public have been kept fully informed as to the progress of the research work carried out by Miss Jane Drew, the Industry's Consultant Architect, and of the subsequent recommendations put forward by the Domestic Heat Services Committee.

There has been considerable preparation for a Kitchen Planning Exhibition to be held in the New Year. Literature, advertisements, and a book which will be illustrated with photographs and line drawings, in addition to many colour plates, are in course of preparation. The date of the Exhibition has been fixed for Feb. 6 to March 3, and it will be held at Dorland Hall. The choice of dates, while forced upon the Industry by circumstances, nevertheless seems to be propitious, for not only is it in the New Year of 1945, which one may reasonably expect to be the last year of the European war, but by then some definite signs of victory may be visible. All this should make the public more and more eager to see an Exhibition of Post-War Kitchens and Homes.

Many Exhibitions have taken place during the year for which the Association has provided model kitchens and brochures, notably a full-scale model kitchen which has been touring the country with the Town and Country Planning Association's Exhibition, "When we build again," and for which an illustrated leaflet was prepared. The B.C.G.A. Studio has also produced a great deal of material for local kitchen planning exhibitions. Nor was the Association in the background in the Government Housing Scheme at Northolt. A brochure has been prepared and will be published shortly giving full descriptions and photographs of the all-gas and gas-and-coke houses, together with details of the gas equipment in some of the other houses. The Domestic Heat Services Committee was responsible for the equipping of these houses.

The Press

THE Association's advertisements have, to some extent, been curtailed by increasing lack of space in papers, but they have appeared at fairly regular monthly intervals in 150 national and provincial newspapers and in 56 trade, technical, and professional journals and in certain selected magazines. The main theme of this year's advertizing has been the Industry's plans for providing a complete fuel service after the war, but specialized advertisements have appeared dealing with technical matters such as infra-red and the Northolt houses.

Woven into the general pattern of publicity for the Domestic Heat Services Committee were many different editorial threads. The strongest was a series of weekly articles distributed to the undertakings which participated in the scheme and the results were excellent. Items of news interest relating to the Gas Industry were sent to the national and provincial Press as and when they occurred, and carefully considered editorials to interest a wide range of trade and technical Press were supplied. For instance, an article on Infra-Red Heating by Gas which appeared in the *Times Trade and Engineering Supplement* scored such a success that the Ministry of Information asked permission to reproduce it throughout Russia, and later commissioned a special article on the subject to be sent to all Press Attachés throughout the world. Special feature articles have been written for journals and women's magazines, and the full texts or extracts from important speeches made during the year were sent to a wide range of appropriate papers. Side by side with the Press work, important public relations contacts were maintained with individuals in Government Departments, and in industries and associations of interest to the Gas Industry.

Educating the Public

On the educational side the Association has been very active. A series of three text-books for schools is in course of preparation. The first one, *Gas. What it is. What it does*, has been recently published and very well received in the school world. The L.C.C. have recommended its addition to their list for teachers' reference, and some Directors of Education have already arranged for the distribution of a large number of copies to their schools. A book for senior science classes and a book for domestic science teachers have been prepared, and are to be published in the New Year. Educational displays for the Forces have been very successful, and lectures have been prepared for service units as well as those for general audiences. Three lecturers were appointed in the summer, and have already given 180 talks between them. The educational value to the public of the film "Words and Actions," sponsored by the Association and produced during the year, has appealed particularly to the Army, who have purchased fourteen 16 mm. copies and forty-two 35 mm. copies. A film on Housing is in production, and also a "short" on Kitchen Planning to be used in connexion with the Dorland Hall Exhibition.

Assistance has been given by the Association to several Government Departments in their efforts to educate the public. Material for the Ministry of Food Information Boards has been circulated to members regularly, also recipe leaflets, displays, and posters. Nutrition refresher courses were held monthly at the headquarters of the Ministry of Food for gas demonstrators. Co-operation with the Ministry of Fuel and Power's fuel-saving campaign has been seen in the B.C.G.A. advertisements, and help has also been given in connexion with "Make-do and Mend" sponsored by the Board of Trade. The Association co-operated extensively in publicity for the Government's housing estate at Northolt, and also with the Exhibition on Housing Equipment held in Birmingham.

Publications

In spite of shortage of paper, 22 new publications were brought out during the course of the year, and the Ministries of Food and Agriculture co-operated with the production of garden and cookery leaflets. Many excellent suggestions for posters and local advertisements were made for members' use. The rota window display scheme was considerably extended with the help of several Government Departments. This scheme provides a free loan service in support of the national effort, over 1,000 displays being arranged during the year.

In January a News Sheet giving details of the B.C.G.A. activities and some points of general interest was inaugurated, and since then it has been sent out regularly every month. Another publication helpful to members is the bi-monthly Domestic Heat Services Report, which sets forth the progress of that Committee, gives full information on all Government housing activities, and draws attention to the work of other bodies in relation to post-war housing and kitchen planning.

The Association's Home Service Section has rendered assistance to member undertakings in planning kitchens, in appointment of demonstrators, in engagement of speakers and lecturers for special occasions, in subjects for lectures and demonstrations, and many other matters affecting the Gas Industry's relations with domestic consumers. *Home Service* information sheet has been published bi-monthly to keep undertakings abreast of activities in other areas; it now has a circulation of 1,700 copies. It is sent to 40 Home Service departments in America, and one manufacturing firm reprints each issue for widespread distribution in U.S.A.

A special Committee set up under Mr. T. Smith, of the Derby Gas Light and Coke Company, considered and reported very fully on the post-war recruitment and training of gas salesmen.

There was renewed activity during the year in Salesmen's Circles, and eight of them are now holding regular meetings. It is hoped that in the near future several more will renew their activities.

A Competition was arranged at the suggestion of the North West District for a standard design for Gas Industry vehicles. Over 800 entries were received, and the judging was carried out by a panel appointed by the Design and Industries Association.

Women's Gas Council

The year has seen substantial progress in promoting the improvement of the standard of home life by the distribution of information regarding scientific home management and developing a wider understanding and appreciation of the service of gas to women—two of the main objects of the Women's Gas Council. There have been hindrances—more women called to the Forces and factories, flying bombs, and the substitution of a skeleton meeting in October for the normal summer annual meeting, to mention a few—but these have been outweighed by the new opportunities presented by the prospect of an early peace. The Council is determined that the young women who may soon return to civilian life shall find facilities for discussing matters relating to housing and home-making. Most of the branches have remained active and have taken part in local war work, and the secretaries of those which are not at present meeting have kept in touch with their members, and it is hoped that it will not be long before many of them reopen. One new branch has been opened at Dunfermline, the first in Scotland; Swindon has resumed activities; Rochford, Essex, is to have an inaugural meeting next month, and the gas undertakings in many other places are considering the formation of new branches. A monthly letter instituted 13 months ago keeps local secretaries in touch with the work at headquarters and current events, and is much appreciated. The 107 headquarters members, who at present meet quarterly, but hope to have a fuller programme shortly, have had some famous speakers during the year. Walthamstow lost its meeting-place through enemy action, but the members now attend the meetings of the West Ham branch.

The W.G.C. has submitted evidence to the Committee of Enquiry into the Gas Industry. The Organizing Secretary is a member of the Gas Installations Committee, whose report was submitted to the Ministry of Works and published as *Post-War Building Studies, No. 6*. She is also a member of the Domestic Heat Services Committee, and was a member of the deputation from the B.G.F. received by Lord Portal at the Ministry of Works early in the year. She represents the Council on the Gas Salesmen's Committee set up by the B.C.G.A. dealing with the training of sales and home service personnel after the war. The sphere of influence of the W.G.C. extends far beyond the Industry; besides continuing to work in close conjunction with Government Departments, the Women's Services, and the Army Bureau of Current Affairs, it co-operates with a considerable number of national organizations, including the National Council of Women, W.V.S. Advisory Council, Women's Group on Public Welfare, Food Education Society, Equal Pay Campaign Committee, Housing Centre, Women's Advisory Housing Council, and others too numerous to be catalogued in this review. In most cases Mrs. Abbott personally represents the Council. She is also a member of the Executive Committee of the British Federation of Business and Professional Women, and still finds time to edit the Federation's quarterly magazine, *Women at Work*.

In co-operation with the Ministry of Fuel and Power the Council has taken a big part in the domestic fuel economy campaign, and besides helping in exhibitions it participated with over 20 other organizations in a mass meeting of the Standing Conference of Women's Organizations at Stockton-on-Tees. Speaking on "Domestic Fuel," Mrs. Abbott on that occasion shared the platform, for the first time, with her opposite numbers of the Electrical Association for Women and the Women's Advisory Committee on Solid Fuel. The Council has also provided the Ministry of Labour with information on the post-war organization of private domestic employment, and arranged visits to the Portal and Northolt experimental houses for members of the Executive Committee. Demonstrations and exhibits were provided for an Instructional Course and Exhibition on Fuel Efficiency arranged by the Ministry of Fuel and Power in London in October.

There have been increasing sales of the *I Pass This on to You* leaflet during the year, and the November issue broke all records with 45,000 copies. Mention of one of the leaflets in one women's magazine brought in about 3,000 postal requests for copies. *Fanfare* sales have also increased, and the limits of the paper restriction have been reached. In the words of the recently issued annual report, "definite progress has been made, and a solid foundation is being laid for further development of the W.G.C. after the war." As a footnote we may add that Miss Halpin, seconded early in the war by the W.G.C. to help in organizing the W.V.S., has been lent by the W.V.S. to the Ministry of Health to act as the Government's alternate delegate on the Welfare Committee of U.N.R.R.A.

Technical Aspects

As during 1943, so during the year under review, the call has been for fuel economy, and considering the circumstances much has been done in this direction, though naturally it has been quite impossible to achieve what could have been achieved had conditions been normal. However, wartime thought and aim in this direction will have peacetime result. Early in the year there was a Paper dealing with the fuel needed to effect carbonization in horizontal retorts. The fuel consumption for horizontals is higher than with other types of carbonizing plant. It has been suggested that the great weakness of horizontal settings is that they were never laid out to burn gas and

air in a scientific manner. The volume of the combustion zone is greatest where heat is developed most rapidly, and smallest where heat is developed most slowly, whereas the reverse should hold, and there is a gradual fading away of heat development from the combustion chamber to the jack arch. Again, the retorts are placed with their major axis in opposition to the main direction of heat flow. From theoretical considerations it has been argued that it would be better to turn the retorts so that the major axis was in the vertical position, and that a logical solution would be to make each vertical column of retorts into one narrow chamber, and run the coal in through the top, which would hardly be horizontal practice. An idea put forward was to recirculate waste gas from the jack arch side to the combustion side, and increase the total heat developed by burning more gas. In this way, it has been stated, there would result a gain in throughput of at least 10%. Even distribution in uniflow furnaces is favoured by a high rate of gas flow, and it might be a good plan, where steam is needed, to do away with recuperators and introduce recirculation of waste gas. It has been pointed out that waste heat steam is no real solution for high fuel consumption, because the steam is not raised with breeze but with an excess of good coke which is burned on the plant. The first waste heat plant erected on a works may provide usable steam and be very welcome, but it would be another matter if the whole works came to be equipped in this way, and waste heat steam may have gained more popularity than in fact it deserves.

We have heard a good deal about the relationship between the technical Gas Industry and the plastics industry. The Gas Industry, through its carbonization process, is an important source of the raw materials—notably benzole and phenol—for plastics; and, secondly, it obviously provides a very great field for the plastics made from its own by-products. The circle is the reverse of vicious, and it seems that its radius could, with mutual understanding between the two industries (one rather old, the other very young, but both very progressive), largely increase. Broadly, the plastics industry wants from the Gas Industry at one and the same time benzole for its "nylon" group of products and phenols for its polythene, &c., groups. This may be somewhat of an incompatible demand. The other angle—again a mutual one—is the use of plastics by the Gas Industry, in which regard a knowledge of the properties of plastics—not only of their virtues, but also of their limitations—is needed. Granted this, and granted, too, a sense of economic balance concerning their use in preference to alternative materials, the application of plastics in the Gas Industry would seem exceedingly promising. This application neatly falls into three categories—in plants for the manufacture of gas, in the distribution system, and in installation practice. For instance, the resistance of polythene to chemical action is something fantastic, but its temperature resistance is limited to about 70°C.; the protection of pipelines and metal structures is an application the possibilities of which spring at once to mind ; and equally obvious are the numerous applications to gasfitting and installation work. By selecting the right sort of plastic it should be possible to produce a better-looking article and maybe a more serviceable and even a more economical one. It is a question of fitness for purpose, and the scope does seem great. The Gas Industry and the plastics industry undoubtedly have interests in common.

We know the times are inopportune for adding to the gas engineer's many burdens, for the shouldering of which he is all too frequently paid scantily, and we realize that the gap between desire and practice cannot under present conditions of labour and materials be bridged; but we do look forward to what we may term a "must" clause about organic sulphur removal as soon after the war as possible. Technically, it would seem, there is nothing to stand in the way, and economically there should be no barrier. And looking to the future we recall a contribution in our columns this year in which the authors gave a clear and full account of recent development work. The unit dealt with operates on the catalytic process, and it has been at work since the beginning of 1938. It has proved itself. The plant is a "pilot" plant only in the sense that it has led the way. Actually it has a capacity of 1,500,000 cu.ft. of gas (8,500 therms) a day. Teething troubles were experienced but quickly remedied, thanks no doubt largely to the careful experimental work which preceded erection of the plant. Working costs have been shown for the whole process at pre-war prices, the cost per therm given being 0.135d.—a small figure of expenditure to be able to send out gas containing practically no sulphur, and thereby opening up new fields of use quite apart from enormous saving in appliance maintenance costs. The plant described is at the Harrow Works of the Gas Light and Coke Company. The process is a proved proposition, and it is not a question of size of plant. Large works or small works could, according to the authors, apply it.

The subject of district heating has also called for attention, and it has been pointed out that the objectives of schemes for providing heat by steam or hot water distribution are precisely the same as those of domestic gas supply. The issue fundamentally is whether gas or steam or hot water is the most suitable medium for the purpose. Gas, it has been stated in a recent Paper published in our pages, can provide all the fuel services necessary in the house, but steam and hot water are limited to the provision of basic heating and hot water: they cannot supply heat for cooking or high temperature radiant heating. This is a very important point. The figures usually quoted as the weekly or annual cost of heat service by steam or hot water look quite moderate, but when the cost of supplementing this service by gas and electricity is added the appearance is changed considerably. The Author of this particular contribution went on to say that gas is commonly regarded as too costly for basic heating in the winter months, and it is somewhat dearer than solid fuel used in independent appliances, on account of the heavy capital investment required for manufacturing plant to meet the peak demand. Published details of district heating schemes show that a capital expenditure of £80 to £120 per dwelling is contemplated. With such a sum available, a gas undertaking could not only build the necessary manufacturing plant to meet the maximum demand, but also have a balance of £40 to £60 per house to provide appliances. The net commodity costs of gas and of heat in hot water at the point of production are slightly in favour of hot water, but losses in distribution would reverse the position and make gas the cheaper.

Regarding appliances we have seen new models of gas fire for continuous heating combining convection heating with radiation, and giving a higher thermal efficiency than normal types to which we are accustomed. These new models, it should be noted, employ "luminous" flames. There would appear to be a big future for non-aerated gas burners. Then we have been able to describe a cooker of noteworthy and in many respects novel design which entirely dispenses with the bunsen burner, and employs exclusively and throughout burners of the non-aerated-gas type. The performance of the new cooker on the district, when such general experience becomes possible, will be anticipated with the liveliest interest. There has been further district experience with the "neat-gas" cooker in the area of the South Metropolitan Gas Company, and the outcome has been eminently satisfactory. Turning to water heaters, we have seen development aimed at cutting maintenance costs to a minimum. We have described a twofold method of approach—to eliminate corrosion on the "gas faces" of the appliance, the while eliminating the formation of scale on the water faces. Both factors are of obvious importance in their bearing on the life of the appliance, its maintenance cost, and its continued high thermal efficiency, on which, of course, depends its running cost. The problem is easy to state, but it is not so easy to arrive at a satisfactory practical solution meeting the requirements of everyday use on the district. That in spite of wartime difficulties a solution has been arrived at is notable. There has been produced in the first place a heat and corrosion resisting alloy of good thermal conductivity, and having a coefficient of thermal expansion the same as that of copper. A transfer efficiency of 75% in the heater has been attained. District trials under conditions particularly favourable to corrosive attack have indicated that need for maintenance from this cause has been reduced to a minimum if not eliminated entirely. That is one angle; the other has been the elimination of scale formation. A "dispenser" has been brought out to secure proportionate dosage to the water flowing through the heater of a reagent (a dosage of the order of two to five parts per million only) which minimizes hard water scale formation. Here again district tests in many different parts of the country and under widely differing conditions of hard water supply have shown how this treatment will usually almost completely suppress the formation of scale within the appliance.

Street Lighting

THE high light—or, rather, the dim light—of the street lighting field was the relaxation in September last of the blackout, when the Government gave permission to arrange for what has come to be known as "moonlight" lighting—*i.e.*, an illumination not exceeding 0.02 foot-candle, compared with the 0.0002 foot-candle of "starlight" lighting. The partial lifting of the blackout did not find the Gas Industry unprepared. For a considerable time there had been close collaboration between the Industry, the Government Departments concerned with home security, labour, and the supply of materials, and the local authorities primarily responsible for public lighting. As a matter of fact major attention had been paid to the problems involved in the full restoration of lighting rather than to those of partial lighting for an indefinite period. The Industry was ready to provide a very big percentage of normal lighting on the word "go," and to complete the job very speedily. There is, of course, a great

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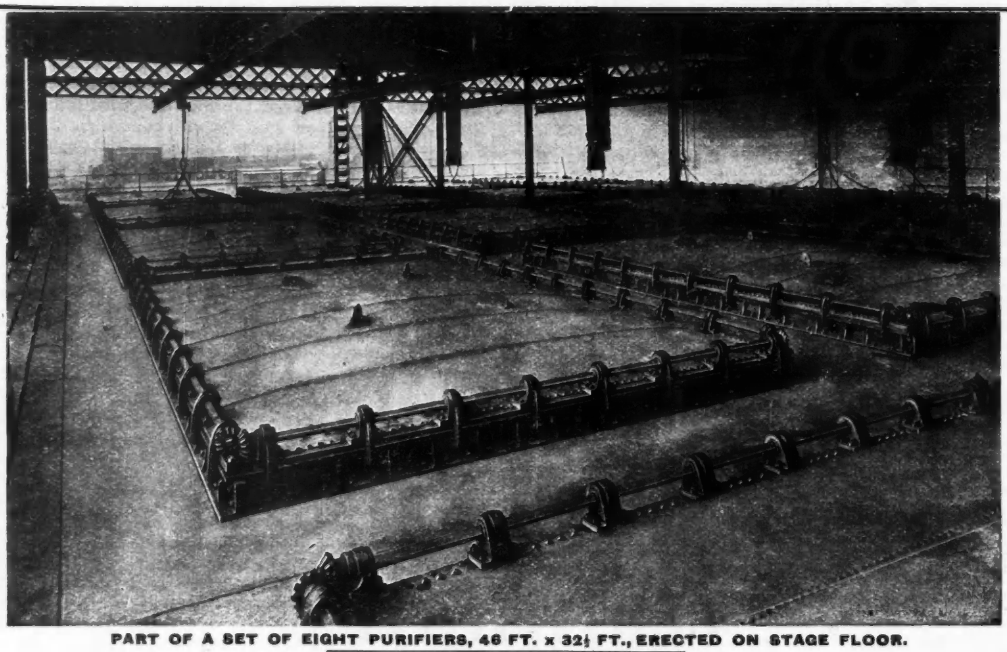
deal of difference between normal lighting and moonlight lighting, and adaptation of existing lamps to the interim moonlight standard involves substantial labour and considerable expense. The question has not been one of technical difficulties; it has been the open one whether for what may prove a short span the labour and expense are fully warranted, the question being all the less easy of decision in that modification of the lamps from moonlight to normal will mean further labour and further expense—and a further inevitable time-lag in the restoration of peacetime illumination which the public obviously desires. However, much progress has been made in moonlight illumination. In the popular Press there has been evidence of a certain amount of impatience about the matter, but the point is that the decision to proceed with the new form of lighting rests with the local authorities concerned, and bearing in mind the incertitude of the dim-out period, all local authorities have not been of the same mind. Certainly delay in giving effect to the lighting relaxations allowed by the Government cannot be blamed on any lack of preparedness on the part of the Gas Industry.

Coke

OUTSTANDING events in the coke world during the year have been the implementation of the main recommendations in a report on future coke development from the General Committee of the National Federation of Gas Coke Associations, and the inauguration of the British Coke Research Association. Prepared as a confidential document 13 months age, the development report was not generally released until after the National Technical Committee which it advocated had been set up and the formation of district associations in every area had been completed as far as organization was concerned. The Federation has sought and obtained membership of the British Gas Federation. Future policy, particularly with regard to technical development, has been fully prepared and agreed, not only nationally, but by the various district associations. Recognizing that for many years it must continue as a two-fuel industry, the Gas Industry seems to be setting its house in order to pursue a progressive and active coke policy with more vigour than has characterized it in the past. Broadly, the development plan aims at the co-ordination and regulation of coke prices, the study and development of existing and new markets for coke, the provision of suitable smokeless fuel, and the encouragement of the design and production of fuel-burning apparatus which will be efficient and acceptable to the consumer, and generally to enable the gas coke industry to maintain its proper place in relation to the solid smokeless fuel industries in the post-war fuel economy of the country. The plan will entail a not inconsiderable charge against coke revenues, but it provides for expansion of coke markets at a cost which is insignificant in comparison with the loss resulting from under-consumption and indiscriminate price-cutting, and the belief is expressed that if each undertaking were to adopt, as regards coke sales, a similar policy to that adopted in connexion with gas sales, the results would fully justify the expenditure entailed. Already some of the district associations have appointed local technical committees, and coke advertising may take on a national rather than a regional aspect.

The inauguration of the British Coke Research Association is welcomed by the gas coke industry as a parallel of the Gas Research Board, which is dealing with fundamental research on coke and all matters pertaining to coke production. The B.C.R.A. has been formed under the aegis of the British Hard Coke Association, representing practically all the coke ovens in the United Kingdom, and with the support of the Department of Scientific and Industrial Research, and will co-ordinate the work previously undertaken by the Midland, Northern, and Scottish Coke Research Committees. To what extent the two sides of coke research will co-operate remains to be seen, but it was a happy augury that at the initial meeting of the B.C.R.A. the prospects of co-operation with other fuel research organizations were emphasized. There must be many parts of the pattern of research on coke which have common interest for the gas and coke industries, and it is to be hoped that their research programmes will be conceived in that spirit of collaboration which will obviate unnecessary duplication of valuable effort. There would still appear to be no body dealing with research on the utilization side. Such work as has been done in this connexion is largely carried out by gas undertakings and coke ovens individually, and by the technical committees which are concerned with new appliances, and it does seem that something more than this will ultimately be required. Where the division of research between production and utilization is to be met is a matter which still awaits decision.

Regarding the coke stock position, the stocks of coke at the beginning of the year were high, and in some cases embarrassingly so. To-day the position is exactly reversed, and severe embarrassment is caused by the lack of coke in most areas, due to the increased demand



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for coke in the normal course of events, and to the substitution which has taken place as the result of the pressure brought to bear by the Ministry of Fuel and Power for the use of coke in place of coal with the object of helping to eke out the restricted coal supplies. It may be that the process of substitution has been overdone, particularly in view of the fact of gas undertakings having to implement the Water Gas Order. The Gas Industry was called upon to use carburetted water gas to the maximum possible extent, and this in itself took a great tonnage of coke off the market at a time when it could ill be spared from normal demands. Labour problems, too, have been difficult, and while the coke position in many undertakings has been to some extent rectified, they cannot depart from their water gas programme because they cannot get sufficient labour to operate their coal gas plants, which again is causing special difficulties in connexion with coke production.

To secure an equitable distribution of the available coke, the principle of "programming" supplies has been adopted. This work is being undertaken by the District Coke Associations through representatives appointed by the Coke Directorate of the Ministry of Fuel and Power. It has entailed heavy responsibilities and a great volume of work, and it has undoubtedly resulted in more effective distribution. It has also probably obviated more ponderous Government control machinery, which might otherwise have seriously harassed the Industry.

In the general sphere of post-war development the year's work so far as coke is concerned has been confined to the production and development of post-war appliances which will be efficient and effective for normal domestic usage. Open fires, closed stoves, and domestic boilers have been substantially improved, and the results are reflected in the number of appliances which have already been adopted for the Government prototype houses erected at Northolt. The Ministry of Works clearly visualizes the use of solid fuel for a large part of the space heating and hot water load in low cost housing, and generally appliances suitable for using solid smokeless fuel have been installed. By and large, therefore, the outlook for gas coke of suitable quality in the domestic market is very bright, and it is for the Industry by ensure that the trends which are at present quite definite are pursued for the benefit of all concerned. The development of the appliances and the improvement in efficiency are due to the co-operative working which has taken place between the solid smokeless fuels technical committees and the various groups of manufacturers concerned with the different types of appliance.

Tar and Tar Products

THE control of Tar Order, 1943, to which full reference was made in last year's review, continues. Obviously, much valuable information has been accumulated regarding actual quantities of tar made, the sources from which such tar arises, and in what directions it is disposed. Equally, an invaluable record has been compiled of the derivative products in their various grades, from crude to super-refined. The cross-checking which has been instituted admits of a reliable indication of the Industry's present and immediately potential sources which hitherto was lacking.

This year has seen further price controls—The Control of Benzole and Coal Spirit (No. 2) Order, 1944. An earlier Order provided for the acquisition of a quantity up to 50 gallons a quarter of xylole by any person without licence; this concession has now been extended to benzole and coal spirit, while the minimum amount of coal tar naphtha that may be acquired or disposed of without licence in any one quarter is unaltered at 200 gallons. The other changes were of a minor order, and have reference to returns by producers, the fixation of special prices by the Ministry of Fuel and Power in certain cases, and other matters. The specification relating to motor benzole, as indicated in the earlier Order, has been modified—the specific gravity is changed to 0.800–0.885, from the 0.870–0.885 hitherto operating. A further change in the new Order is a slight increase in the maximum controlled price for toluole. For nitration grade the new price is 2s. 9d. per gallon, loaded into buyer's or loaned drums or other containers at seller's works. Some slight criticism was made about the somewhat cumbrous means by which a minor alteration was brought into effect, and the hope was expressed that there might be greater simplicity in the future.

Increases in the maximum prices of crude and refined naphthalenes as from Sept. 22 last have been published. Since November, 1941, when the Coal Tar Controller assumed control of naphthalene, there had been, up to the date in question, no change in the maximum price for any of the grades of the material. Production costs in the interim had undoubtedly advanced, while the demand had become more brisk. The increases now allowed are certainly not liberal. Crude naphthalene, on the *ex* Works in bulk basis, has been raised from £5 8s. 9d.–£8 9s. 7d. per ton to £6 6s.–£9 15s. per ton, the various prices within each range being dependent on the melting-point of the material. Hot press naphthalene *ex* Works in bulk has been advanced from £10 5s. to £11 11s. per ton, while the increase in refined naphthalene (crystals, ball, and flake) has been £1 15s. per ton, the new price for crystalline naphthalene being £22 15s. per ton for ton lots, in seller's 2-cwt. single bags.

While the war years have introduced their peculiar problems, tar distillers have largely been spared the necessity of searching for markets, and there has been freedom from the embarrassment of heavy stocks of pitch and creosote, which in pre-war years caused concern. There has undoubtedly developed during the war years an exemplary co-operative effort within the industry. What is of significance is the formation of a British Tar Confederation, representative of all producers and distillers of tar. An amendment of the draft constitution of this confederation, it will be recalled, was before the National Gas Council recently for consideration, and it is now provided that the National Gas Council shall, with the British Association of Coke Oven Tar Producers and the Association of Tar Distillers, be eligible for membership. Steps have been taken by the Central Executive Board of the N.G.C. to appoint representatives to the Executive Board to be set up in accordance with the constitution. The need for further co-operation was revealed in the recent discussion in London on the tar-products requirements of the plastics industry. Again, it is conceivable that the wider use of pitch and allied materials in the building trades will demand further collaborative effort.

A Joint Post-War Planning Committee has been established by Group "C" of the Association of British Chemical Manufacturers (embracing the Association of Tar Distillers) and the Ministry of Fuel and Power. It is understood that in co-operation with the producers of crude tar a case is being developed for an upward revision of the price structure established by the Coal Tar Control, to a level which would correctly reflect increased costs of the current production over those obtaining at the time the price structure was fixed. That British tar products have played a vital role during the war years, and that materials previously imported have been successfully replaced, are generally conceded. In view of this, it seems inconceivable that a return to the unsatisfactory position regarding pitch and creosote which from time to time existed in the past should be possible.

Attempts to attain higher thermal efficiency in the process of tar distillation are to be commended. One such process (B.P. 563,240/1943) possesses a dual claim—namely (*a*) higher thermal efficiency, and (*b*) close-cut, or, by implication purer, products. According to the specification, a process is provided for the recovery of benzole, toluole, naphtha, light oils, and creosote oils from tar oils by fractional distillation of the tar oils in a fractionating column, operated under such conditions of temperature that a side stream is removed at the top end of the column, comprising benzole, toluole, naphtha, and light oils, and also a lower side stream comprising creosote oil, and issuing from a column at about 220°C., wherein the upper side stream is redistilled by heat exchange with the creosote side stream, and is then further fractionated in a second column to recover separately benzole, toluole, and naphtha fractions.

In America singularly good progress in the development of methods for large-scale isolation, in pure form, of the bases occurring in coal tar has been made. The industry has now available in commercial quantities pyridine, alpha, beta, and gamma picolines, 2, 6-, 2, 4- and 2, 5-lutidines, quinoline, quinaldine, letitine, isoquinoline, and 3-methyl isoquinoline and acridine.

A modification in the alkylation process for the separation of meta and para substituted cresols and allied products is described in B.P. 557,519 of 1942, granted to the Shell Development Company. According to this specification, when alkyl phenols are further alkylated, the substitution proceeds predominantly in available ortho and para positions to the hydroxyl radical; thus, for example, when alkylating a 3-alkyl phenol, the 2 position will alkylate at a sensibly lower rate than the 6 position. Many of the alkylated para-substituted alkyl phenols obtained by this process are useful as oxidation inhibitors when incorporated in cracked petrol and other petroleum products. In contrast, most meta-alkyl phenols have little, if any, anti-oxidant value.

A method for the purification of crude anthracene, described by the South Metropolitan Gas Company and W. Kirby (B.P. 557,766/1943) is of peculiar interest. The crude anthracene paste is heated to a temperature at which the solids are molten, the mass solidified by cooling slowly without agitation, and the solidified mass subjected to a pressing operation to express entrained oil. The novelty lies in the fact that when this treatment is applied to a paste from which the entrained oil cannot be separated by pressing directly, not only does it become possible to separate the oil by pressing, but hydrocarbon impurities accompany the expressed oil in such a proporti that the

solid product which remains has a content of anthracene exceeding 40%.

During the year there has been active co-operation between the British Road Tar Association and Government departments, which has led to a growing appreciation of the properties of specified tar for road construction and maintenance. This combined effort will be of definite advantage to all concerned after the war. There is reason to believe that the reconstruction and maintenance of existing roads are likely to be first priority in any highway programme. It seems certain that road tar and tar macadam will be increasingly used. Knowledge has been gained during the war concerning the application of semi-hot-process macadam on roads damaged by heavy tank traffic, and other developmental work undertaken in conjunction with the Ministry of War Transport will be invaluable later. The post-war prospects for road tar are excellent, and further research will doubtless reveal extended uses.

Product Ammonia and Sulphur

THE farmers of this country are powerfully organized, and it would seem that their interests are paramount. At all events, this is the only conclusion that can be drawn from the fact that home prices for sulphate of ammonia remain the same as for last season, and represent 48s. per ton over the corresponding prices of 1938–39. The practice of the last few seasons has been repeated—namely, farmers and agricultural merchants have been granted an early-booking rebate, of which full advantage has been taken. Transport is by no means normal, as war traffic is still inordinately heavy. But the Railway Companies have worked commendably. Collections from sulphate works are to be desired, as there is still difficulty in supplying trucks and sheets.

The cost of manufacture of sulphate of ammonia continues to advance, but extra costs cannot be recovered. It is here that certain chemical controls are under criticism. Too much reliance should not be placed on the strength of a single concern; it should be recognized that there cannot be uniformity of conditions. Some works are in the front line, suffering all the disabilities associated with a front-line attack. It is imprudent to describe what form these disabilities take, but they are real, and due allowance should be made in common fairness.

Again, in the matter of spent oxide, some works have been called upon to store material inordinately, in order to help smaller gas undertakings in the south. The handling and storage of excessive quantities of spent oxide is costly, and services of this kind should be recognized. It is to be hoped that current prices will not fall precipitately, leaving those who have rendered service to bear the financial burden.

The scientific foundation of our fertilizer industry has been assailed by the Howardists, and in the *Sunday Times* of Feb. 6 last Lord Hankey supported the Howardists in an article—"The War in the Soil." This school of thought attacks artificial fertilizers and demands more humus. Mr. P. Parrish replied to these allegations in a contribution to the Birmingham Section of the Society of Chemical Industry and the Agricultural Section in March last, pointing out that "the case against artificial fertilizers in general cannot be established merely by indicting the sulphate ion. What the Howardists prove is that the addition of humus promotes healthy growth, because it is essential for proper development. No one in the fertilizer industry is inclined to dispute this statement. On the contrary, it has been urged repeatedly that we cannot satisfy our post-war requirements and the clamant needs of the enemy-occupied countries without restoring serious soil deficiencies, the chief of which are humus and phosphates. It has long been recognized that the physical condition of the soil, which is primarily influenced by the presence of an adequacy of humus and micro-organic activity, needs the application of nutrients, of which nitrogen, phosphoric acid, and potash are the chief, if soil fertility and food productivity are to be obtained. The attack by the Howardists lacks experimental proof, and, moreover, the use of fertilizers is vindicated by a century of practical experience and research. This attack is peculiarly ill-timed, because Mr. Hudson, the Minister of Agriculture, declared some time ago that the yield of cereals and root crops exceeded anything hitherto obtained, and, curiously enough, more sulphate of ammonia had been used than ever.

The production of Grade I sulphate of ammonia of well-defined grain size still exercises the minds of certain managers of coke ovens. Where the semi-direct process is concerned, it is not unusual to find saturators ranging from 13 ft. to even 13 ft. 9 in. diameter, recovering 12 tons of sulphate of ammonia per day of 24 hours. These saturators obviously have to deal with a large volume of coke oven gas, and the maximum permissible pressure drop in many cases is of the order of 15 in. water gauge. Many of the new saturators are now provided with a central cracker pipe, with a venturi head, to which is attached a phosphor bronze casting providing the necessary slots for the emergence of the coke oven gas containing ammonia. These central pipes generally are homogeneously lead-lined inside and out. The saturators, apart from being lead-lined, are brick-lined with acid and heat-resisting bricks, and these certainly prevent erosion of the lead. In many cases the maintenance of the crystals in suspension is effected by circulating the mother liquor from the bottom of the well by means of a La Bour pump through copper coils and returning it tangentially to the top of the well. This method, of course, involves heat for the maintenance of the water balance. How far it is to be preferred to a gas ring placed in the conical well of the saturator, of such size and arranged with such perforations as will support the crystals in their mother liquor, is a matter on which no positive opinion has yet been expressed. Apparently satisfactory results have been obtained by both methods. It is, however, interesting to observe in this connexion that sulphate of ammonia saturators 10 ft. in diameter, suitably arranged internally, are producing, with synthetic ammonia, 75 tons of sulphate of ammonia per day, and with the indirect process there are to-day saturators 7 ft. internal diameter producing 40 tons of sulphate of ammonia per day.

Urea is now being produced from concentrated gas liquor by a method developed by C. Koeppel. Normally, concentrated gas liquor from gas-works or coke oven works, containing 20–25% NH_3, is partly desulphurized and then submitted to pressure distillation, whereby ammonium carbamate is formed. The pressure employed varies according to the CO_2 content of the liquor, and may be as low as 10 atmospheres if the amount of CO_2 is much less than that required for the carbamate reaction, or as high as 30 atmospheres if the CO_2 is appreciably in excess of the theoretical equivalent of the ammonia. The method consists in pumping the concentrated gas liquor into the pressure still through a heat interchanger, the distillate (H_2O vapour, NH_3, CO_2 and H_2S, &c.) being passed to a series of collecting coolers, where the ammonium carbamate separates in solid or semi-solid form. This product, which is of 90–95% purity, is converted into urea by the usual pressure method. The gases leaving the coolers are returned to the gas stream for recovery of the ammonia. Purification of the urea is effected by evaporation and treatment with hydrogen peroxide.

A new process for the production of thiourea from ammonium thiocyanate is being developed in Germany. The thiourea is formed by intra-molecular rearrangement, when ammonium thiocyanate is heated above its melting-point (149°C.). The novelty of the new process consists in the use of liquid SO_2 as a solvent for separating the product from the unchanged thiocyanate.

Stocks and Shares

As a natural sequence to the triumphant progress of the allied armies during the greater part of the year, the values of Stock Exchange securities have, in the majority of cases, shown a very satisfactory upward movement, and Gas Stocks and Shares have benefited to no mean extent in the general tendency. With few exceptions there has been nothing spectacular in the rises; it has been a year of small but steady improvements month by month, so that the majority of stocks now stand at substantially higher levels than they did on Jan. 1. There has been a good demand, while supplies have been short except for the stocks of the larger undertakings, and this also further accentuated the improvement in values.

Apart from the comparatively few companies which have suffered as a result of local conditions, the majority of those operating at home and abroad have maintained their rates of dividend. As regards the three Metropolitan undertakings, the position of the Commercial Gas Company was made quite clear to the stockholders by Mr. F. H. Jones at the Company's Annual General Meeting in February. The Company has been among the few which, owing to special local circumstances, has paid no dividend since 1940, and now that the ban on the publication of accounts has been lifted, their results will be awaited with interest. The ordinary stock, however, has moved up a few points since the beginning of the year. The Gas Light and Coke, on the other hand, increased its ordinary dividend to 4% in 1943, and has paid an interim of 2½% this year; the units have appreciated 4s. The South Metropolitan distributed 3% in 1943, and, in accordance with the Company's practice during the war, the results of the current year are awaited before any dividend announcement will be made; the stock has risen from 85½ to 93½. Other London companies have been more fortunate, *e.g.* Tottenham has distributed 5% each year since 1940, and South Suburban paid 4% for 1942 and 5% for 1943. The Ordinary Stock of the former has gained 7 and the latter 18 points during the year. The stockholders of most of the Provincial undertakings can have little cause for complaint since, among others, the Bristol, Liverpool, Newcastle, and Sheffield Companies paid their

pre-war rates for 1943. Fixed-interest issues have also well maintained their values, and have recorded a general all-round increase on the year of from 3 to 4 points.

As regards companies operating abroad, the stocks of the Bombay and Oriental Companies have again recorded substantial appreciations, the former gaining 14s., and the latter 26 points since January. The price of Imperial Continental stock has fluctuated and has closed at 33 higher, and as conditions become more stable on the Continent there will doubtless be a further good demand for this security.

Obituary

WITH the end of the year we are once again given the opportunity of calling to mind those who, connected with the Gas Industry, have passed on.

During the last few days of 1943 there died two old and valued members of the Industry in Mr. William Buckley and Sir Russell Bencraft. Mr. Buckley entered the service of the Manchester Corporation Gas Department as Chemist in 1889, and until 1930, when he retired, he continued to serve them on the educational side of the Industry. For many years he was in charge of the Manchester Municipal College of Technology. Sir Russell Bencraft died on Christmas Day. For 50 years he had been one of Southampton's leading citizens. His connexion with the Southampton Gas Company began many years ago, and he became a Director in 1924 and Chairman in 1928. Sir Russell was Chairman of the B.C.G.A. in 1927.

Not many days of 1944 had passed when the Industry suffered a heavy loss in the death of Alderman J. H. Lloyd, of Birmingham. From 1891 until his death on Jan. 18, Alderman Lloyd had been a member of the Birmingham Gas Committee. The Gas Industry has on many occasions paid tribute to his work. He occupied many important offices, including that of President of the B.C.G.A. in 1923, and the Vice-Presidency of the National Gas Council and the British Road Tar Association. He served as Lord Mayor of Birmingham in 1901. In his business life Alderman Lloyd was for many years on the Board of Stewarts & Lloyds, Ltd. January also witnessed the passing of Mr. R. M. Holland-Martin, a Director of the Gas Light & Coke Company, who died suddenly on Jan. 17.

Early in February the death occurred of Mr. William Bennett, Engineer and General Manager of the Ashton Gas Company and of the Mossley and Saddleworth Gas Company. Mr. Bennett received his early training at Stalybridge, and afterwards was at Greenock and Lytham St. Anne's. In 1919 he was appointed to Mossley, where he designed and built a complete new works. Mr. Herbert Lees, Managing Director and Secretary of the Hexham Gas Company, with which he was connected for over 50 years, also passed away in February. Mr. Lees was one of the oldest members of The Institution of Gas Engineers, having been a member since 1885. He was twice President of the North of England Gas Managers' Association, having held this office in 1895 and 1926. Mr. George Clarry died on Feb. 14, aged 85. Mr. Clarry was appointed Secretary of the Cardiff undertaking in 1885 and General Manager in 1912, which position he held until 1924 when he retired. He had been a member of the Executives of both the National Gas Council and the B.C.G.A. Mr. B. W. Ellis, who died on Feb. 17, was a Director of the Oriental Gas Company and of the Bombay Gas Company, and Auditor to the Commercial Gas Company, Mr. J. B. Robertson, for 60 years associated with the Bathgate Gas Company, for 47 years as Manager, died on Feb. 18. Mr. J. J. Baines, who retired in June, 1939, after 60 years with Clayton, Son & Co., Ltd., of Hunslet, died on Feb. 27, aged 81. Also in February died Mr. T. S. Godwin, who spent the whole of his working life with the Watford and St. Albans Gas Company, retiring in 1936 from the position of Engineer and Manager of the Watford Works, and Mr. W. Tomlin, who for several years was on the Board of the Isle of Thanet Gas Company.

March saw the passing of Mr. Frank Prentice, at one time Engineer and Manager at Ipswich, and a Director since his retirement in 1932. Mr. F. J. Gould, who had been a member of the S.B.G.I. since its inception and was Chairman of the Council in 1926–7, also passed away in March. Sir C. V. Boys, F.R.S., a highly distinguished Physicist who devoted many of his talents to the Gas Industry, died on March 30.

Mr. J. F. Haseldine, who died suddenly on April 11, had been Engineer and General Manager of the Barnet Gas & Water Company for 20 years. Mr. Haseldine served with distinction in the last war, attaining the rank of Major and being awarded the Military Cross. There also died in April Mr. A. E. Phillips, Consulting Engineer, who was associated with the Watford and St. Albans and the Colombo Gas Companies; Major A. L. S. Wood, O.B.E., a Director of Glover & Main, Ltd.; Mr. G. F. Casson, for many years Director of the Hemsworth and District, Elland-cum-Greetland, Kippax, Sherburn and South Milford, and the Thurso and North of Scotland Gas Undertakings; and Mr. C. Webb, who was for 35 years Engineer and Manager of the Stourbridge Gas Department.

Early May saw the passing of Mr. F. Osmund, Director, Engineer and Manager for many years of the Dorchester Gas Company; also of Sir Gurney W. Benham, Director for over 40 years and Chairman for 27 years of the Colchester Gas Company. In the same month Mr. A. E. Broadberry, who retired from the Board of the Tottenham and District Gas Company last December, passed away. Mr. Broadberry had been connected with the Tottenham Company since 1879. A Past-President of the Southern Association of Gas Engineers and Managers and of the Eastern Counties Association, Mr. Broadberry was President of The Institution of Gas Engineers in 1916–17. He was elected a Vice-President of the B.C.G.A. in 1923. Mr. J. P. Blackmore, Public Lighting Superintendent to the Bombay Gas Company, died on May 30.

Mr. F. W. Cooke, Manager of the Kirkby Lonsdale Gas-Works, died in June, as did Mr. Hedley Hoy, who retired from the position of Engineer and Manager of the Workington Gas Department in 1941. Captain S. P. G. Hoare, who was in the service of the Wandsworth and District Gas Company, was killed in action. Captain Hoare, who joined the Forces in November, 1939, saw a considerable amount of service, and was twice wounded. He was awarded the Military Cross. Others who died in June were Mr. A. S. Foster, Constructional and Maintenance Engineer to the Severn Valley Gas Corporation, Mr. Alexander Dow, for many years Manager at Galashiels, and Mr. J. C. Parker, Chairman of the Wellingborough Gas Company.

Mr. J. P. Pratt, a representative of Richmonds Gas Stove Co., Ltd., and of George Glover & Co., Ltd., died on July 15. He was very well known in the Midlands, as also was Mr. H. W. Murphy, of Cannon Iron Foundries, who died on July 6.

Mr. T. P. Ridley, Director and Secretary of the Newcastle and Gateshead Gas Company, died on Aug. 2, Entering the Industry as a junior clerk at Newcastle in 1889, Mr. Ridley became Secretary in 1918, and finally rose to be General Manager and Secretary in 1938, from which position he retired in 1940. Mr. Ridley rendered outstanding service to the Industry as a member of the Executive Committees of the N.G.C. and B.C.G.A., and the British Road Tar Association, and as a member of the Durham District Committee of Investigation under the Coal Mines Act of 1930. Mr. Ridley was a Director of the Shotley Bridge, Newbiggin, and the Amble and Warkworth Gas Companies. Also in August occurred the deaths of Mr. A. MacKay who retired from the position of Chief Engineer and General Manager of the Stoke-on-Trent Gas Department last year, and of Mr. W. H. Kitson, formerly Gas and Water Engineer at Dereham.

In autumn there died Mr. W. Wilson, late Engineer and Manager at Burton-on-Trent, Mr. D. T. Livesey, who had completed 50 years' service with the East Grinstead Gas and Water Company, and Mr. T. Scott, Superintendent of the Granton Works of the Edinburgh Corporation; Mr. E. H. Dart, Secretary to the Exeter Gaslight & Coke Company; Mr. A. B. Dunn, who, before retiring 10 years ago, was for 20 years Manager at Pittenweem; Mr. F. J. Brampton, formerly Secretary to the Tunbridge Wells Company, and Mr. H. Butt, Chairman of the Weston-super-Mare Gas Company.

In October we ourselves suffered a great loss in the death of Mr. T. F. A. Blencowe, who for 48 years had been a most loyal and devoted member of the "JOURNAL" staff.

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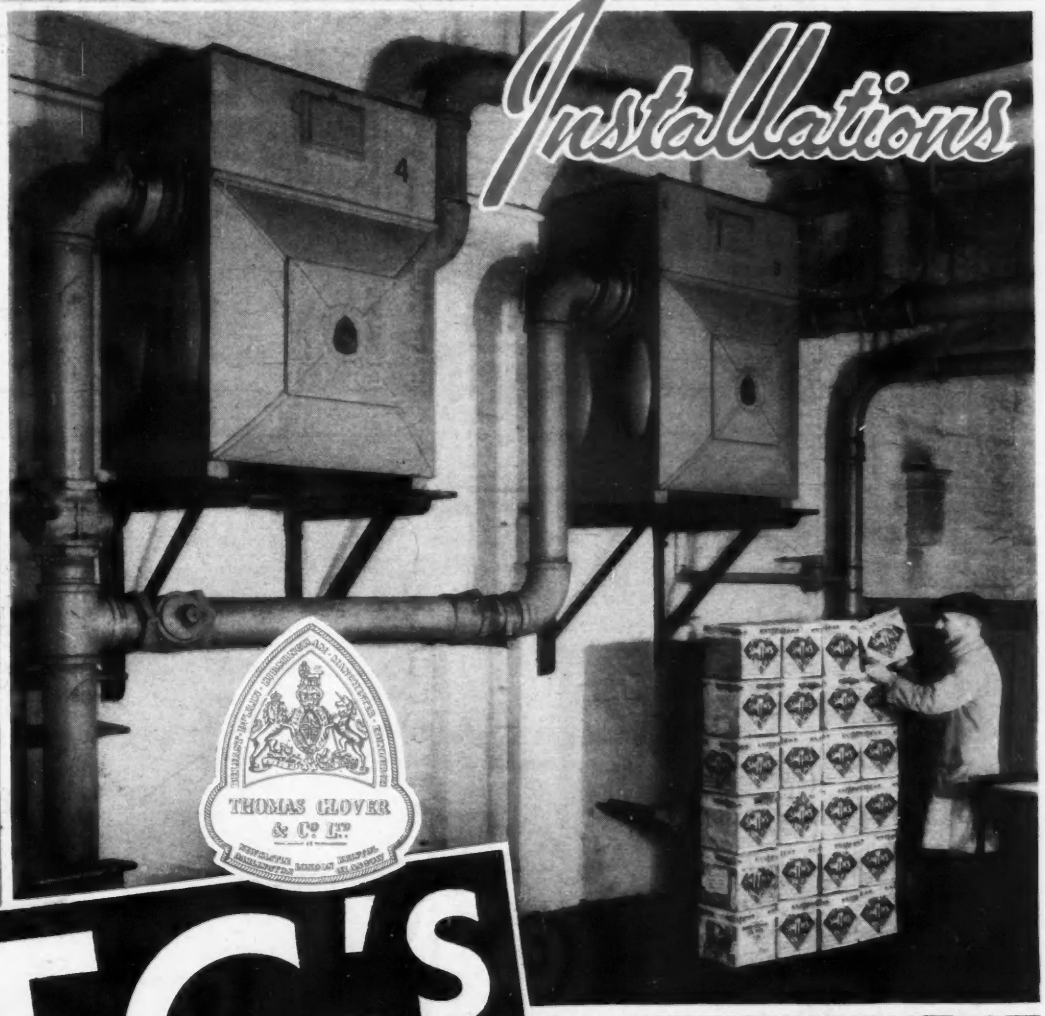
Vol. 244. 96th Year. LONDON, DECEMBER 27, 1944. Registered as a Newspaper. No. 4258. Price 1/-

FOR TROUBLE FREE

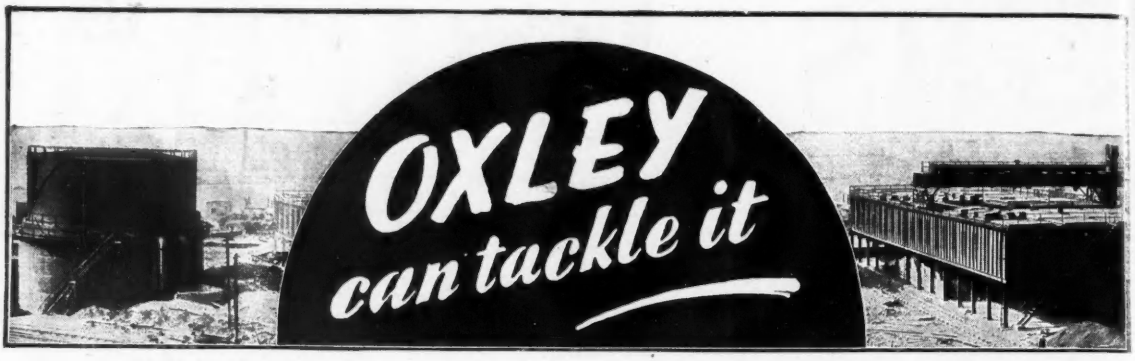


T.G.'s

GAS METERS

THOMAS GLOVER & CO. LTD

EDMONTON · LONDON N·18 & BRANCHES



CONSTRUCTION OR REPAIR *of* GASHOLDERS AND PURIFIERS BY ELECTRIC ARC WELDING

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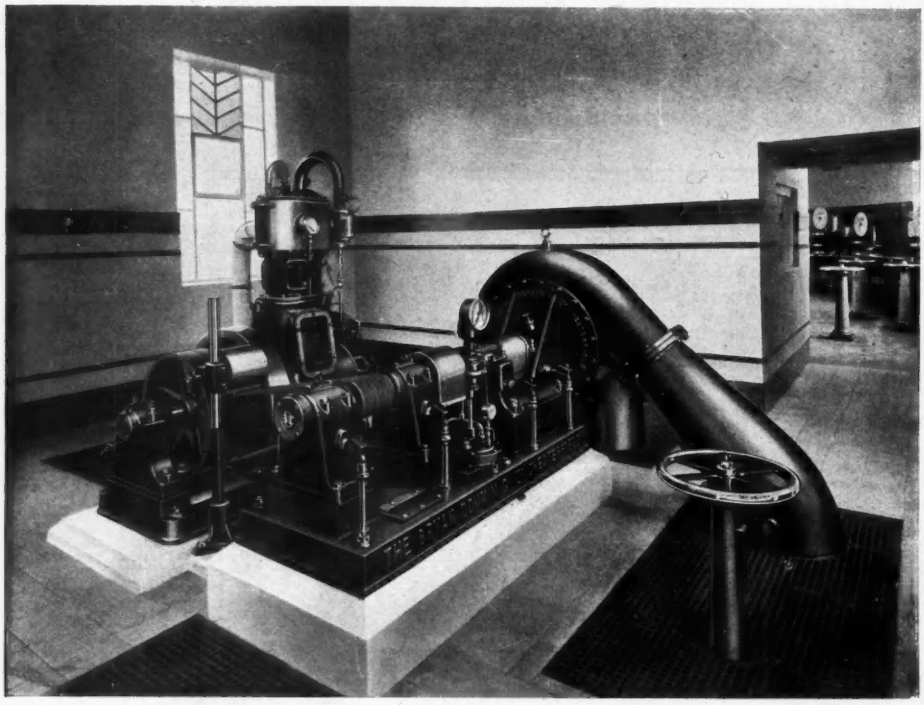

Rateau Turbo Gas Boosters and Exhausters

....

Fig. 907.—Rateau Turbo Booster driven by a Vertical High Speed Steam Engine through "V" Ropes.

THE BRYAN DONKIN COMPANY, LTD.

Gas Works Plant Engineers, CHESTERFIELD

MEMBERS OF THE SOCIETY OF BRITISH GAS INDUSTRIES

GAS JOURNAL, DEC. 27, 1944

VOL. 244 96th YEAR No. 4258

A VERY LARGE TIPPLER-HOIST

FOR
THE SOUTH AFRICAN
RAILWAYS & HARBOURS
ADMINISTRATION

CAPACITY 2,000 TONS PER HOUR
OF COAL
OR MANGANESE ORE

DESIGNED, CONSTRUCTED
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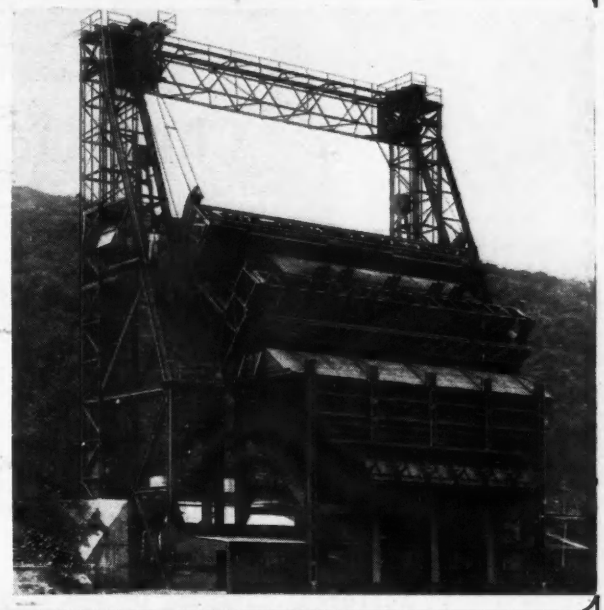
BY STRACHAN & HENSHAW LTD.
WHO MAKE
WAGON TIPPLERS OF ALL
TYPES & SIZES FROM THE
SMALLEST TO THE WORLD'S
LARGEST



STRACHAN & HENSHAW LTD STEELHOIST WORKS
TELEPHONE · BRISTOL 77664 TELEGRAMS · STELHOIST, BRISTOL ST. PHILIPS **BRISTOL 2**

RANELAGH GARDENS, CHELSEA, opened in 1742, became the resort of 18th Century 'quality' for gay occasions. Concerts, magnificent balls and fetes were held here for over half a century, with the added attractions, as Horace Walpole observed, of "eating, drinking, staring or crowding."
Here is the famous Rotunda from a print in the possession of

GEORGE GLOVER'S
of CHELSEA
Makers of "Ranelagh" Gas Meters

Christmas, 1944

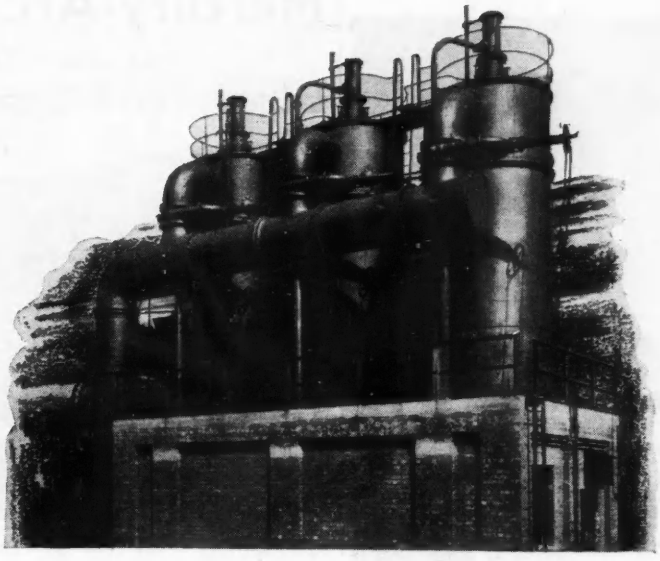
We look forward to returning fully to our peacetime production, which of necessity has had to take a position very much in the background in a City where war requirements, to the exclusion of everything else, have had to take a pre-eminent position. Another year of war lies behind us, and we anticipate the future with every confidence that peace will e'er long be restored, enabling us all to return to our normal vocations. We therefore take this opportunity of wishing you a very happy Christmas indeed, and a particularly propitious New Year.

Yours very sincerely,

For and on behalf of

GEORGE WILSON GAS METERS LTD.,

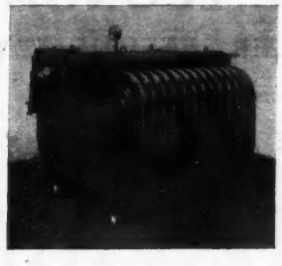
Managing Director.

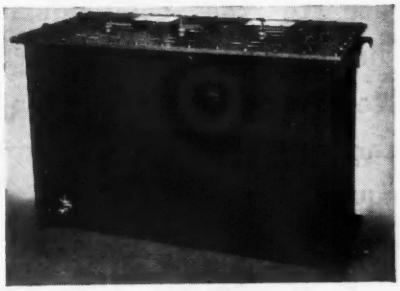


MULTI-UNIT W·W-D ELECTRO-DETARRERS

SPECIAL EQUIPMENT FOR LARGER INSTALLATIONS

FOR the larger Gasworks and Coke Oven Plants with gas makes exceeding 12 million cu. ft. per day, it is usual to install multi-unit gas treaters and electrical equipment. The Whessoe Company has recently developed an entirely new type of oil-immersed H.T. switchgear for interconnecting the gas treaters and electrical equipment, this superseding the air-break switchgear formerly employed. The top view illustrates a multi-unit gas treater installation. On the right is an illustration of the oil-immersed H.T. switchgear (patent applied for).





The view on the left shows the Whessoe patented "exposed" type H.T. electrical equipment which is connected to the gas treaters through the H.T. switchgear.

Write for technical information—inspection of this equipment can be arranged on request.

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London Office 25 Victoria St. S.W.1 Head Office DARLINGTON

THE WHESSOE FOUNDRY & ENGINEERING COMPANY LTD

Post-war planning is in the air

Our plan is unexcelled service to the gas industry through the medium of Newbridge domestic appliances and public lighting equipment.

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HORSTMANN GEAR CO., LTD.

NEWBRIDGE WORKS, BATH, SOMERSET

Telephone: BATH 7241 (3 lines).

Telegrams: Horstmann, Bath.

SAVE GAS NOW TO SAFEGUARD THE FUTURE

7366A

Mercury-Arc Rectifiers

for Gas Works

Electrical power supply

four-bulb Electric-Construction Mercury-Arc Rectifier

Input: 400 volts, three-phase 50 periods
Output: 220 volts, 1200 amperes

The equipment is arranged for six-phase rectification, with four bulbs running in parallel

The **ELECTRIC CONSTRUCTION Co.** Ltd.
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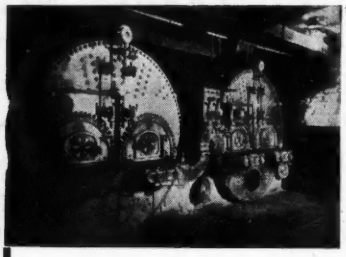

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TURBINE FURNACE

has a reputation for

FUEL ECONOMY

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and the ability to give

LARGE STEAM OUTPUT

with

ALL CLASSES OF FUEL

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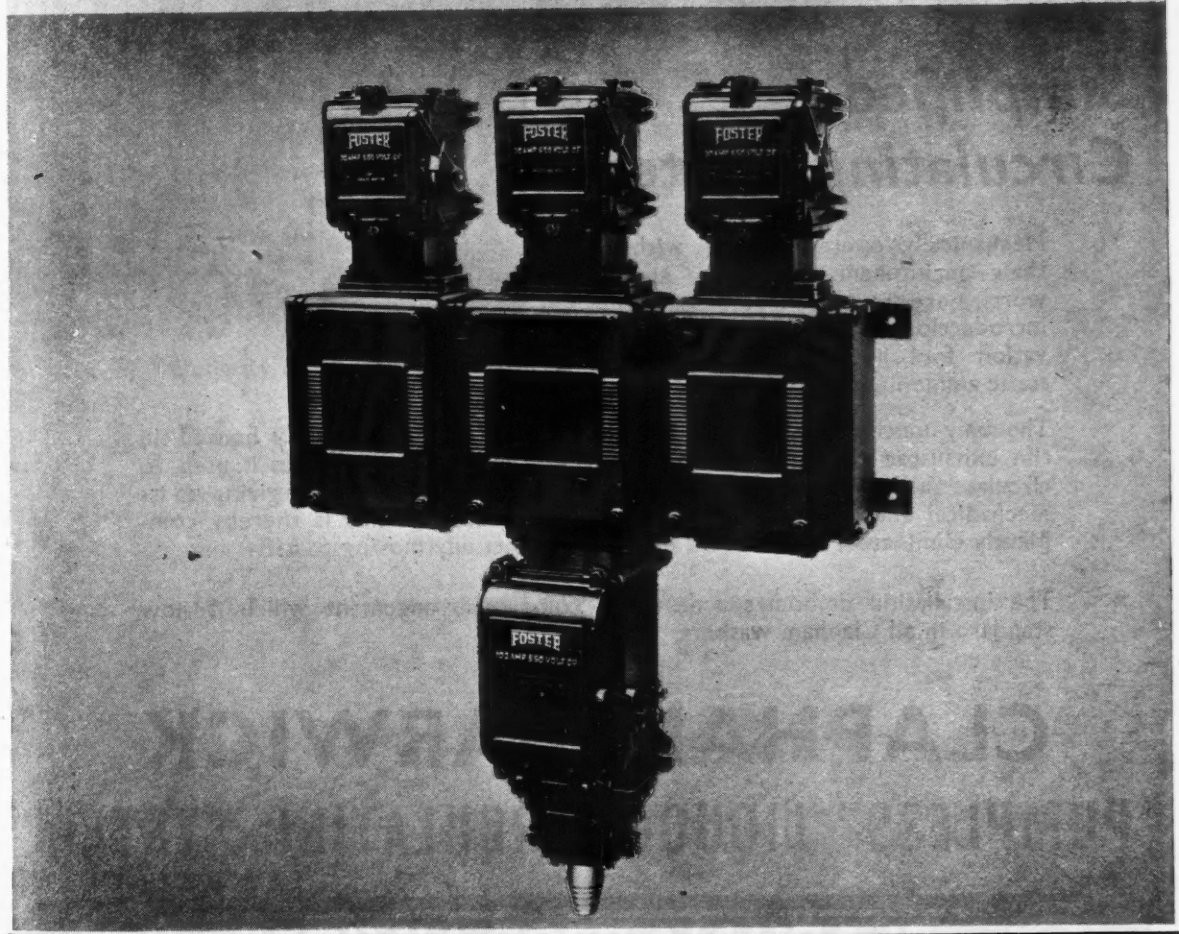
FOSTER

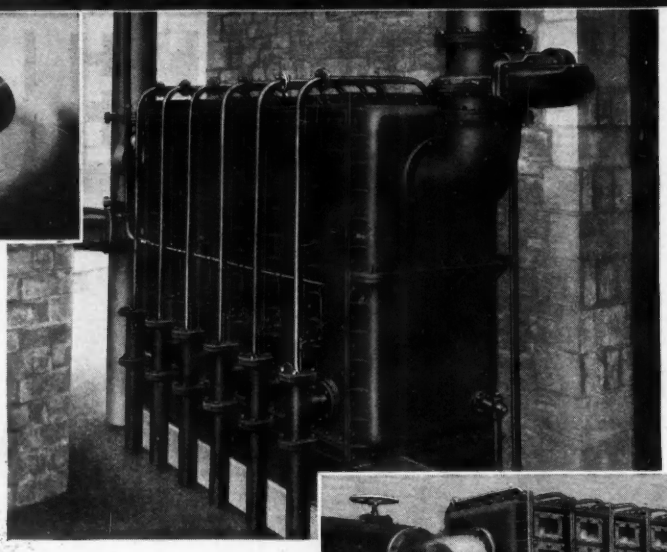
H·R·C·
Heavy Industrial
SWITCHGEAR



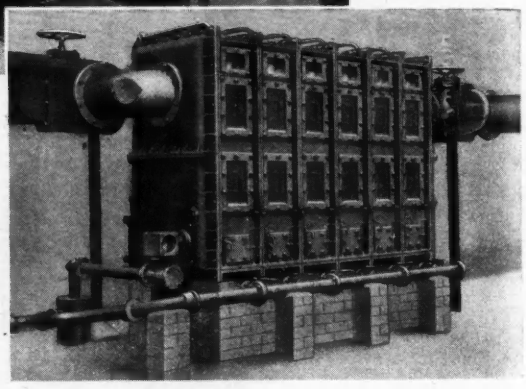
FOSTER TRANSFORMERS & SWITCHGEAR LTD.
(INCORPORATING FOSTER ENGINEERING COMPANY) SOUTH WIMBLEDON LONDON S.W.19.

Associated Companies: **Lancashire Dynamo & Crypto Ltd., Manchester** ● **Crypton Equipment Ltd., Bridgwater**

PUMPLESS STATIC WASHERS



PROVISIONALLY PATENTED



New Simplified Circulating System

Mechanically operated parts with their maintenance troubles and worries are now eliminated by the introduction of this Clapham innovation for liquor circulation in static ammonia, naphthalene and benzole washers.

The only mechanism in the plant is a small compressor easily housed in the exhauster or other suitable position, and compressed gas is used to circulate the liquid, the gas being returned to the gas stream after giving up its mechanical energy. The chief trouble in existing systems is thereby completely eliminated, as the liquid does not contact any moving part.

The installation embodies a neat and compact arrangement which is now standard in all Clapham washers.

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"PUMPLESS" LIQUOR CIRCULATING SYSTEM

CLAPHAM BROS. LIMITED

MAKERS OF GAS WORKS EQUIPMENT SINCE 1837

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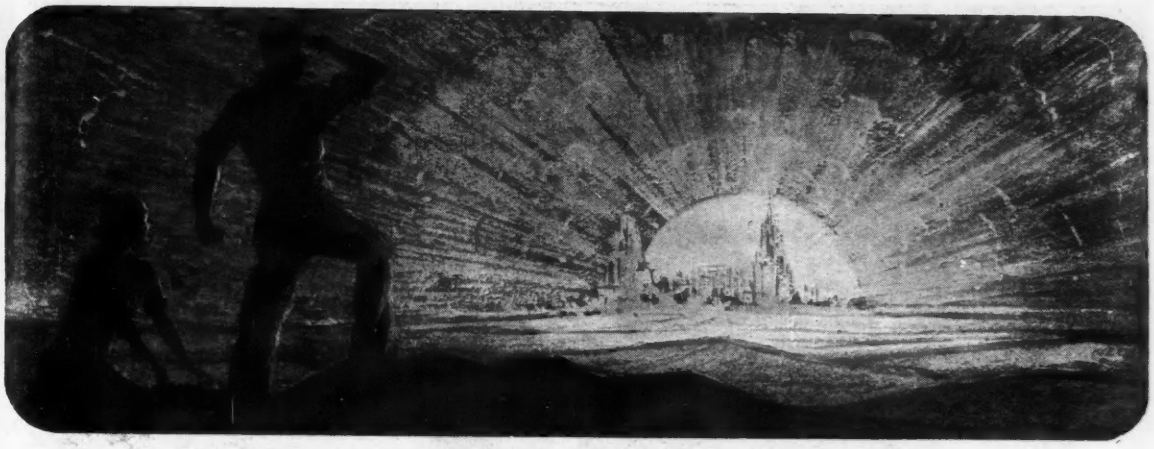


LOOKING TO THE FUTURE

NEW vistas of progress will await the world in the post-war period, but they can only be attained by the hard road of sacrifice.

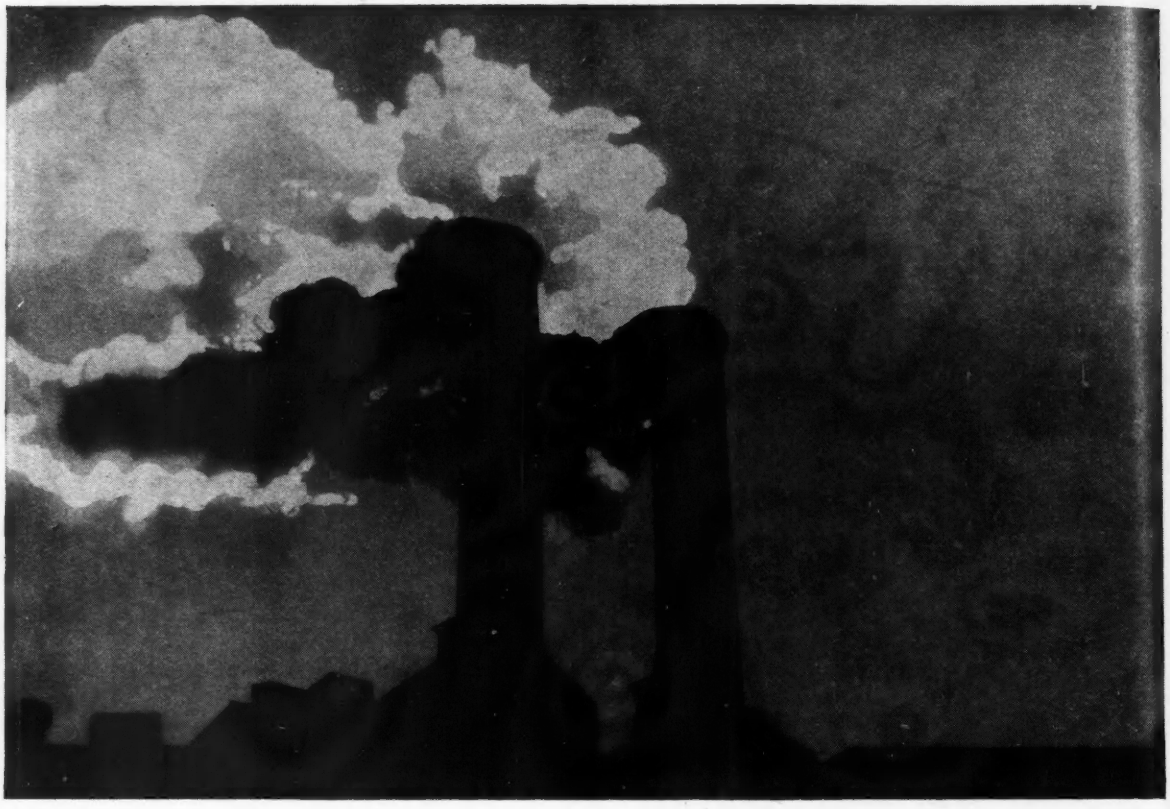
The fact that Bratt Colbran Limited are devoting their maximum capacity to National needs means that they cannot support their friends in the Gas Industry as fully as in happier days.

When the present task is completed, however, and Victory has been won, they will turn with equal energy to the new problems, and will be ready to lend wholehearted support to the significant part the Gas Industry will play in shaping the future.

PORTCULLIS

DOMESTIC AND INDUSTRIAL HEATERS

BRATT COLBRAN LIMITED 10 MORTIMER STREET LONDON W1



PHOSPHATES IN WATER TREATMENT

BOILER WATER CONDITIONING: The use of phosphates in the final conditioning of boiler feed water will prevent the formation of scale, even at the highest pressures. Sodium metaphosphate (Calgon), trisodium or disodium phosphates can be used, depending on the operating conditions of the boiler plant.

CONDENSERS AND COOLING WATER SYSTEMS: Threshold Treatment, using only a few parts per million of Calgon, is being used successfully to prevent calcium carbonate scale forming in condensers, heat exchangers and calorifiers. Threshold Treatment will also prevent after-precipitation in filters and pipes following softening by lime or lime-soda.

Booklets are available on these uses of Phosphates.

KEITH PIERCY LIMITED, OLDBURY, BIRMINGHAM
AN ASSOCIATED COMPANY OF ALBRIGHT & WILSON LTD

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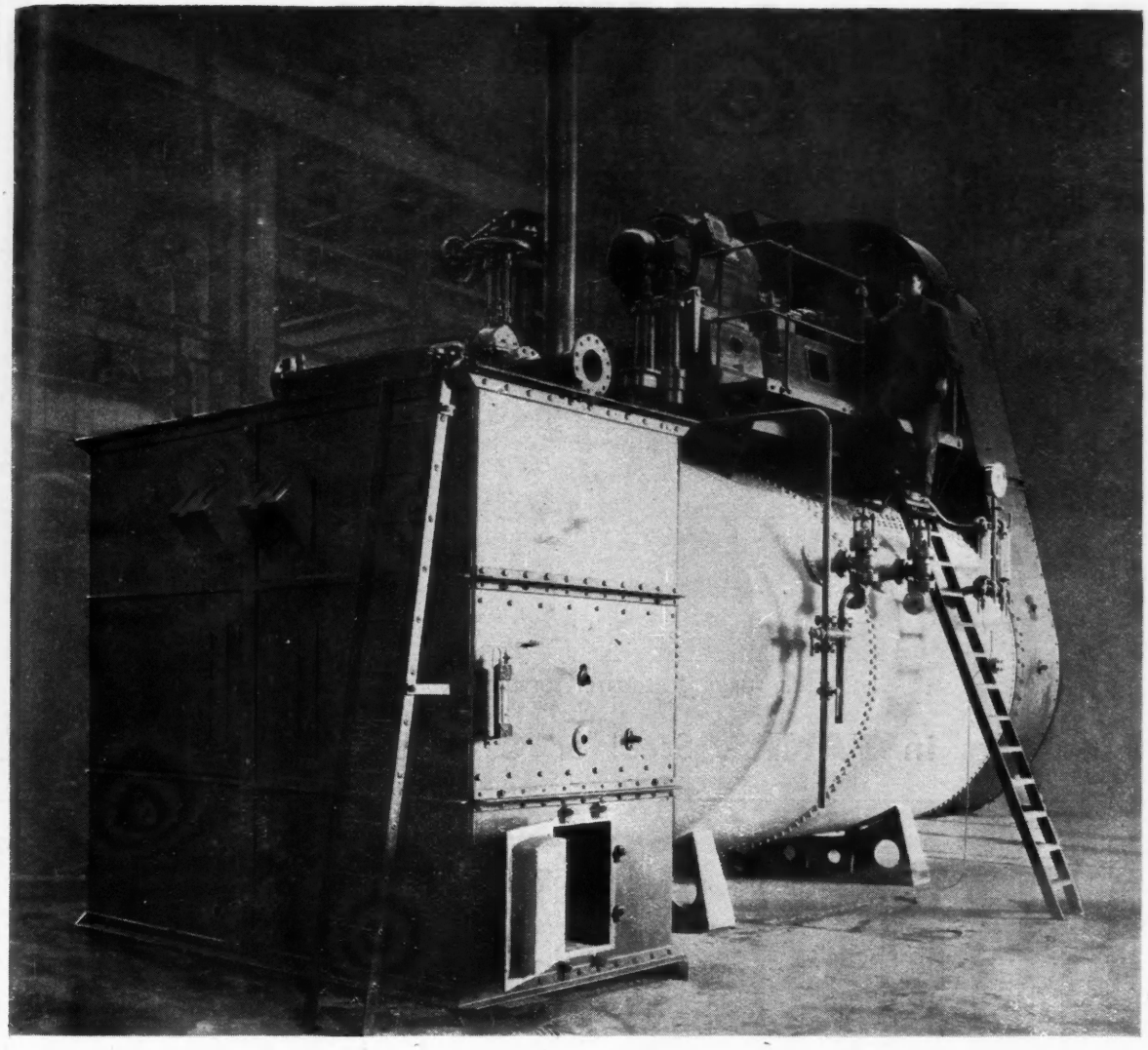

A repeat order for a

SINUFLO WASTE HEAT BOILER

at Swindon

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TAS/CH. 234.

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CONSTRUCTIONAL ENGINEERS AND IRONFOUNDERS,

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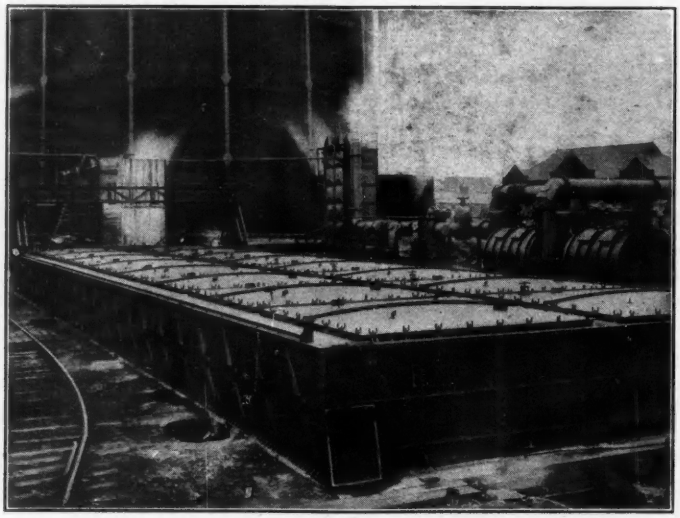

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Specialists in TANKS, Steel or Cast-Iron, Riveted or Welded

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WASHED NUTS
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High Duty Coatings

THE OUTSTANDING
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of the War

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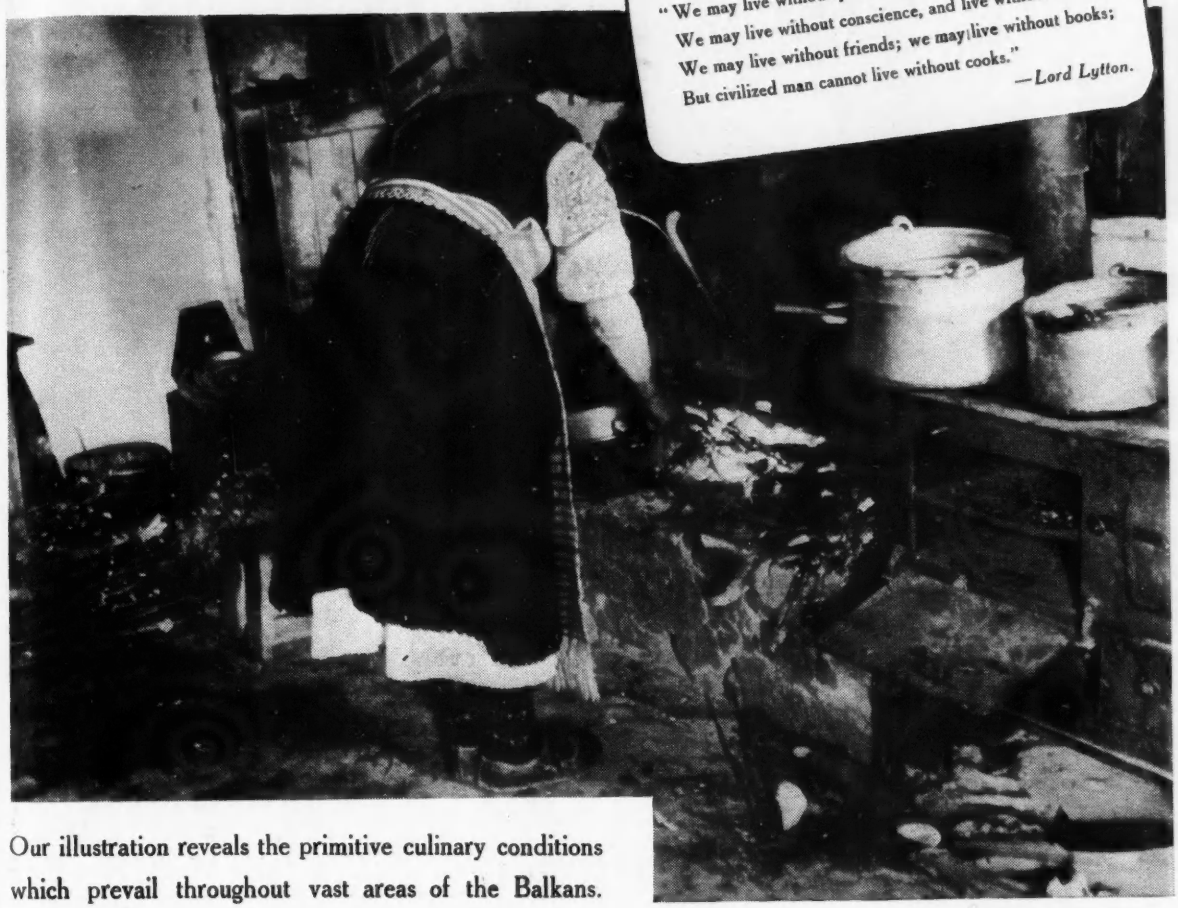
Telephone: WAXlow 1337.

CONTRACTORS TO ADMIRALTY AND ALL DEPARTMENTS OF H.M. GOVERNMENT.

COOKS AND COOKERS

"We may live without poetry, music and art;
We may live without conscience, and live without heart;
We may live without friends; we may live without books;
But civilized man cannot live without cooks."
—*Lord Lytton.*



Our illustration reveals the primitive culinary conditions which prevail throughout vast areas of the Balkans. In it we see none of the conveniences common to our average British kitchens—no "laid-on" water, no tiled floor, no convenient gas cooker served by reliable gas mains—mains which are all the more dependable when Crane pipe fittings are used in their construction.

The TAPER-TO-TAPER THREADS of Crane fittings, by making solid metal-to-metal contact throughout their entire length, ensure stronger joints free from corrosion.

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FITTINGS FOR ANY PIPELINE

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Installations for Production

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Carburetted Water Gas

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Gas Cooling & Cleaning; Fuel Handling & Charging;

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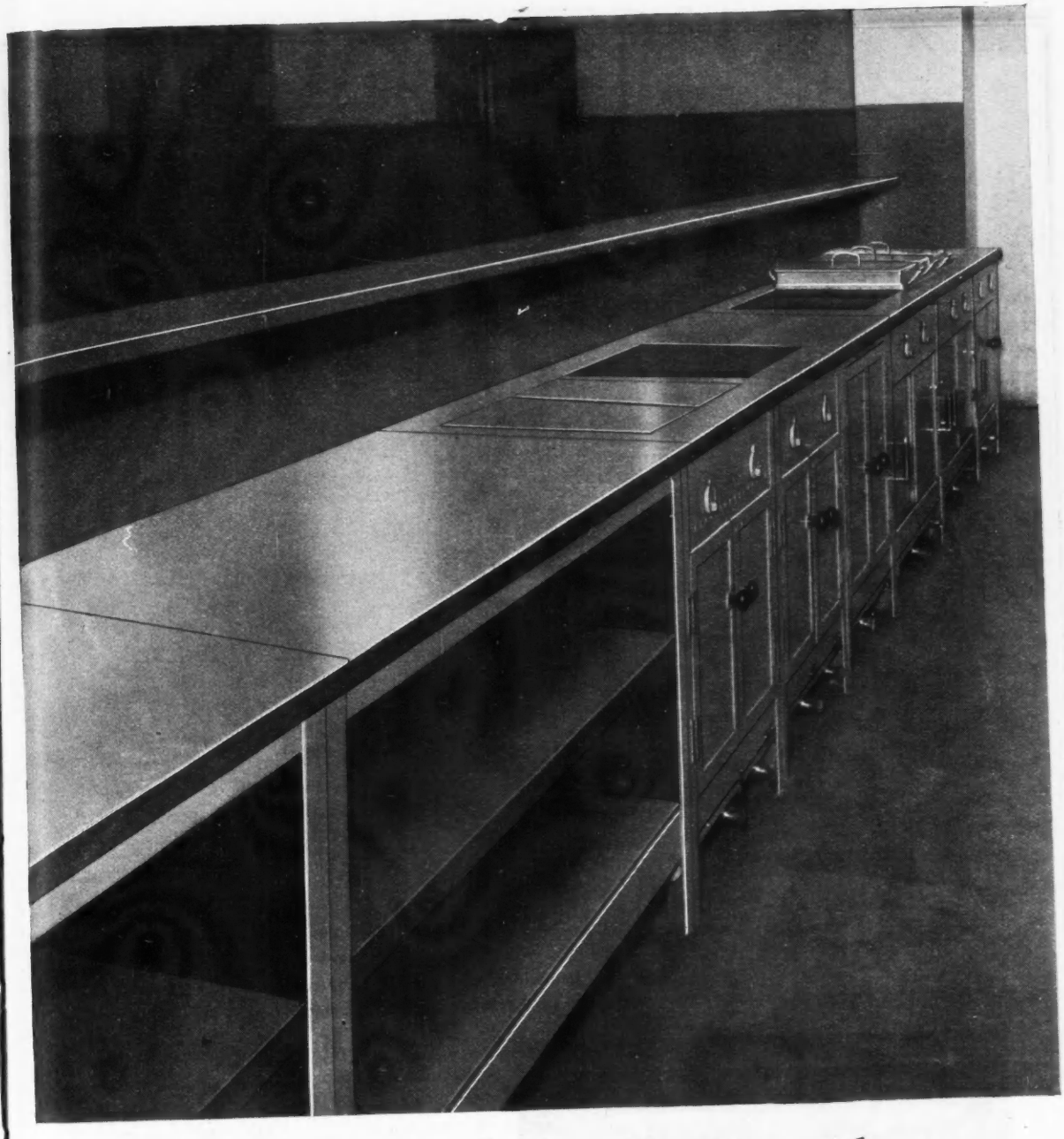


Part view of the Service side of a Cafeteria Counter

An Installation by

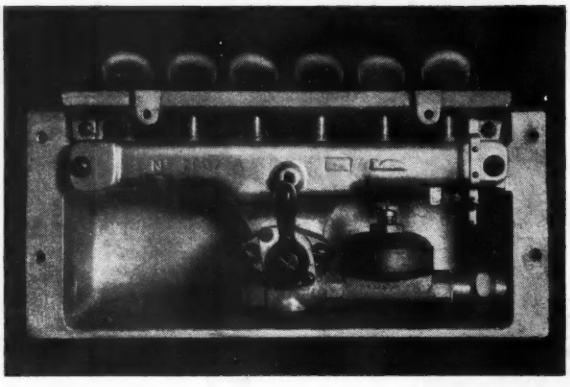
R. & A. MAIN LIMITED MAIN LONDON AND FALKIRK

FIRST OCCASIONS...

from "Editorial Notes," GAS JOURNAL, Jan. 17th, 1940

". . . On July 2, 1930, we published an abstract of a Radiation patent relating to a cobble type of inset fire heated by luminous flames. To the best of our knowledge this was the first occasion on which a brightly incandescent fire of the modern inset type was produced in which the gas was burned in the form of luminous flames, and thus silently . . .

. . . In June, 1937, it became evident that Radiation Limited would before long have available other types of gas fire which would not use the columnar type of radiant that had characterized gas fires since about 1907 . . .



. . . It is to us most stimulating, as we believe it will prove to others concerned with utilization of town gas, to know that the workers in the Radiation research laboratories, . . . should have had the courage to persevere and overcome the difficulties encountered. The results of this breaking of new ground will, we are sure, receive the full recognition and appreciation they deserve from the Gas Industry . . ."

The SILENT BEAM

GAS FIRE

1 Silent in operation.
2 Correct gas rate maintained by means of suitable jet size and pressure governor.
3 Three-position gas tap, facilitating control by the user of heat output, as required.
4 Radiant heat, rich in beneficial short infra-red rays, gives comfortable warmth.
5 Burner will not choke nor light back.
6 Negligible maintenance.

Radiation Ltd.

RADIATION HOUSE
ASTON, BIRMINGHAM, 6

Showrooms & London Office:
7, STRATFORD PLACE, W.1

For every size of works and every class of coal...

WEST'S

CARBONIZING PLANTS

GLOVER-WEST VERTICALS

WESTVERTICAL CHAMBERS

440 carbonizing plants have been built or are under construction by West's in 24 countries. Working results from a wide variety of gas coals have established the high efficiency and adaptability of the West systems.

WEST'S

GAS IMPROVEMENT CO · LTD ·

MILES PLATTING MANCHESTER 10

TELEPHONE—COLLYHURST 2961-2-3-4-5 TELEGRAMS—STOKER MANCHESTER

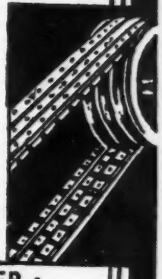
LONDON OFFICE: COLUMBIA HOUSE, ALDWYCH, W.C.2 TELEPHONE: HOLBORN 4108-9 TELEGRAMS: WESGASCO ESTRAND

DICK'S DRIVES

DEPENDABLE AND EFFICIENT

DICK'S ORIGINAL BALATA BELTING: The first and still the best.

DIXEL ROPES: The super drive, V-section.
RUBERIX: The belt with great gripping properties.
DICKROPE: The long life Vee Rope.



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GREENHEAD, GLASGOW, S.E.

And at LONDON; BRISTOL; BIRMINGHAM; LEEDS; MANCHESTER; NEWCASTLE; BELFAST; DUBLIN and DUNDEE.

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Be Sure and Safe by using OUR PATENT "SAFETY" { C.I. TEES, PLUG CAPS / Main BAGGING DEVICE

DRILLING & TAPPING MACHINES, DRILLS, TAPS, REAMERS, etc., etc.

AUTOMATIC LUBRICATION WITH MENNO CUPS

SAFEGUARD MACHINERY BEARINGS

MENNO CUPS ensure Constant Reliable Running, Economy in Maintenance, and Save Time in Attention. Simple to Fit and Operate.

The MENNO COMPRESSED AIR GREASECUP CO. LTD.
Leeds Place, Tollington Park, London, N.4.
Telephone: Archway 1786. Telegrams: "Agreascup, London."

SPECIFY MENNO CUPS FOR LUBRICATION

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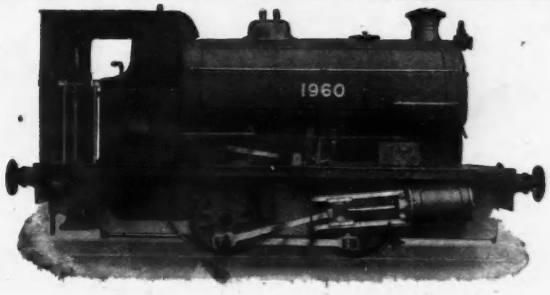
LOCOMOTIVES of all Sizes and Gauges specially constructed for Main and Branch Lines, Contractors, Docks, Gas-Works, Collieries, Iron-Works, Brick and Cement Works, &c. Locomotives of various sizes always in progress for early delivery.

Photographs, Specifications, and prices on Application

PECKETT & SONS, Atlas Locomotive Works, LTD., **BRISTOL.**

Telegraphic Address: "PECKETT BRISTOL."

London Representatives: FERGUSON & PALMER, 0, Victoria St., Westminster, S.W.1



APPOINTMENTS VACANT

WANTED.—WORKS MECHANIC and MAINTENANCE FITTER with knowledge of Electrical Stoking Machinery, &c. Wages 2s. per hour, inclusive of war bonus. State Age, Experience and position regarding military service and Essential Works Order, together with references to W. H. Reed, Engineer and Manager, Gas-Works, Warwick.

WANTED.—GASFITTERS, 1st Grade 1s. 11½d., 2nd Grade 1s. 10½d., 3rd Grade 1s. 9½d. per hour. 47-hour week. Main and Service Layers, 86s. 2d. per 47-hour week. Tinsmiths and Meter Repairers, 94s. 6d. per 47-hour week. Gas Industry conditions. Apply Manager, East Hull Gas Company, St. Mark Street, Hull.

COUNTY BOROUGH OF BARROW-IN-FURNESS

DEPUTY GAS AND WATER MANAGER.

APPLICATIONS are invited from persons duly qualified for the position of DEPUTY GAS AND WATER MANAGER.

The Salary will be at the rate of £600 per annum, plus War Bonus (at present 19s. per week).

Candidates must possess recognized technical qualifications, particularly with regard to water engineering.

There is a strong possibility that on the retirement of the present Gas and Water Manager the successful Candidate will be promoted. This, however, is not a condition of engagement, and will in any event be dependent entirely upon the service and capability of the Officer appointed.

The appointment will be subject to the Corporation's General Service Conditions and to the provisions of the Local Government Superannuation Act, 1937, and the person appointed will be required to pass a medical examination.

Applications, endorsed "Deputy Gas and Water Manager," stating Age, Qualifications, and Experience, and position as regards National Service, and accompanied by *copies* of not more than three recent Testimonials, must reach the undersigned not later than noon on Wednesday, January 10, 1945.

Canvassing, directly or indirectly, will disqualify.

Town Hall, Barrow-in-Furness. LAWRENCE ALLEN, Town Clerk.

SHIFT FOREMAN required. Must have experience in Vertical Retorts and C.W.G. Plant. Good wages and house. Apply immediately to the Managing Director, Worcester New Gas Light Company.

CONTRACTS OPEN

I.G.E. STANDARD METERS—Ordinary and Pre-payment. Tenders for requirements over 1945, in sealed envelope, endorsed "Tender for Meters," by December 29, 1944, to Manager, East Hull Gas Company, St. Mark Street, Hull.

COMPANY NOTICE

THE GAS LIGHT AND COKE COMPANY

3⅜% REDEEMABLE PREFERENCE STOCK, 1970.

NOTICE IS HEREBY GIVEN that the TRANSFER BOOKS of this Company so far as they relate to the above-mentioned Stock WILL BE CLOSED at 4 o'clock p.m. on the 1st January, 1945, and WILL BE REOPENED on the morning of the 2nd January, 1945.

By Order,

Chief Office: 30, Kensington Church Street, W. 8. BRIAN WOOD, Secretary.

8th December, 1944.

REPAIR WORK

CLOCKWORK Controllers, Time Switches, Clocks and every kind of clockwork appliance used in connection with Gas REPAIRED quickly by skilled staff.

Inquiries welcomed. Representative will call in London area if required.—J. W. & R. E. Hughes, 58, Victoria Street, London S.W. 1. 'Phone, Victoria 0134.

PLANT &c. FOR SALE & WANTED

'PHONE 98 STAINES.

FOR SALE.—85 h.p and 30 h.p Bellis High-Speed Enclosed Steam Engine; 35 KW. Browett 220-volt Steam Generating Set; Calorifier by Royles, 5 ft. by 2 ft.; 5 in. 220-volt Electric Centrifugal Pump.

HARRY H. GARDAM & CO., LTD., STAINES.

WANTED.—PORTABLE BOYS' CALORIMETER and Gas Booster to pass 500 cu. ft. per minute at 20" W.G. Good working condition essential. Full particulars to No. 9396, "GAS JOURNAL," 51, High Street, Esher, Surrey.

60% Sulphur absorbed by our

OXIDE

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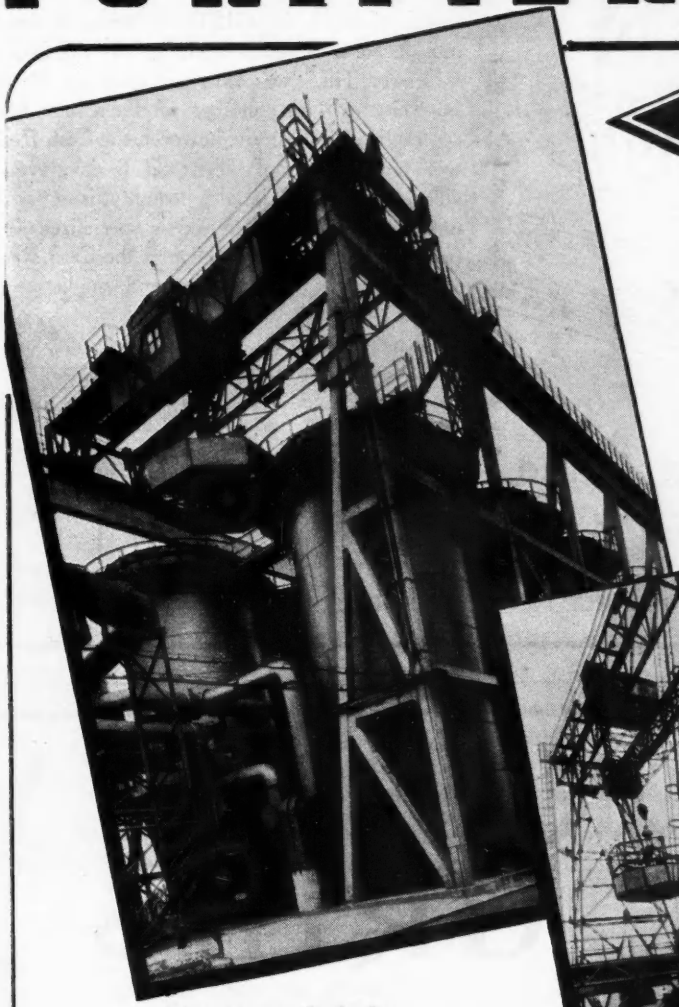

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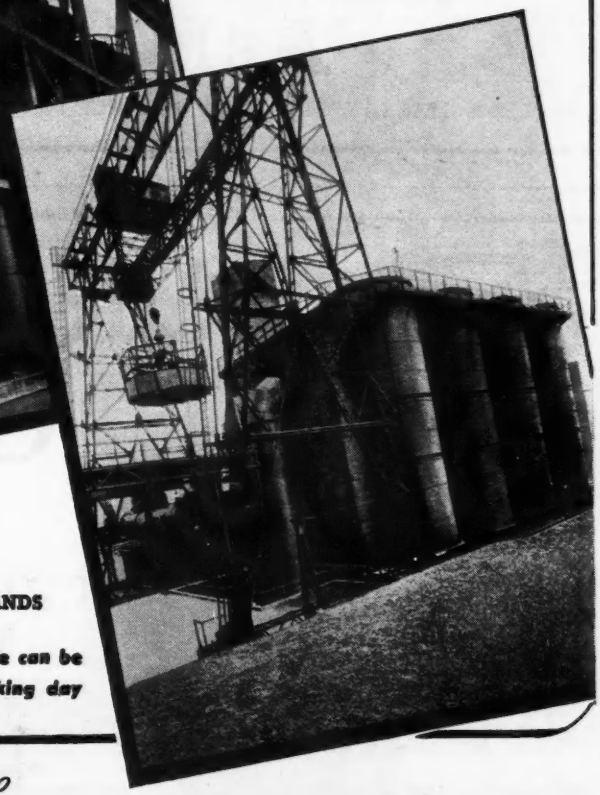

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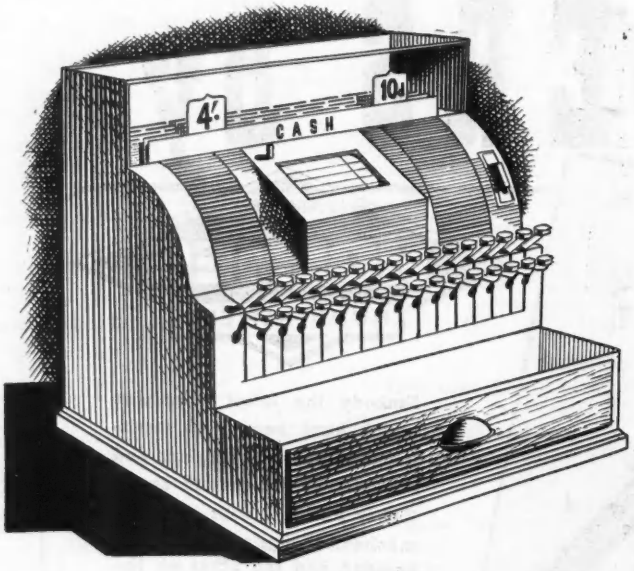

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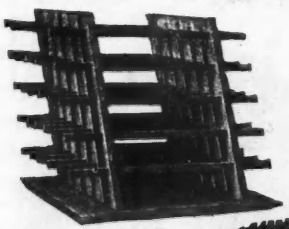

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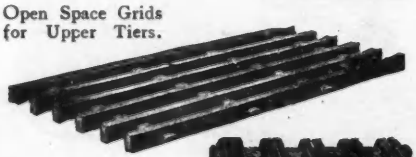

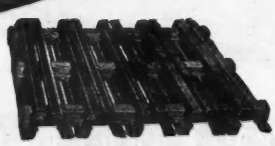

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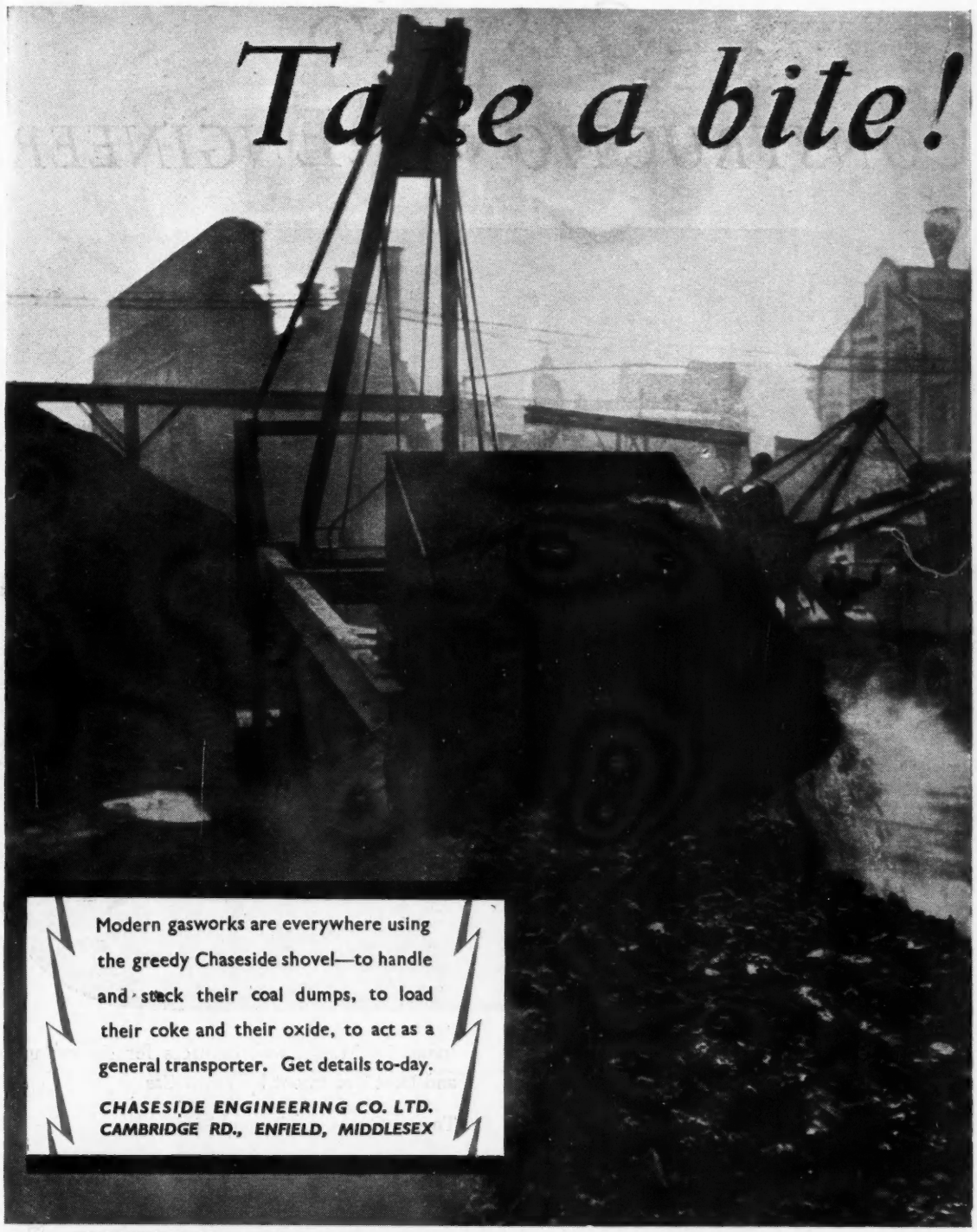
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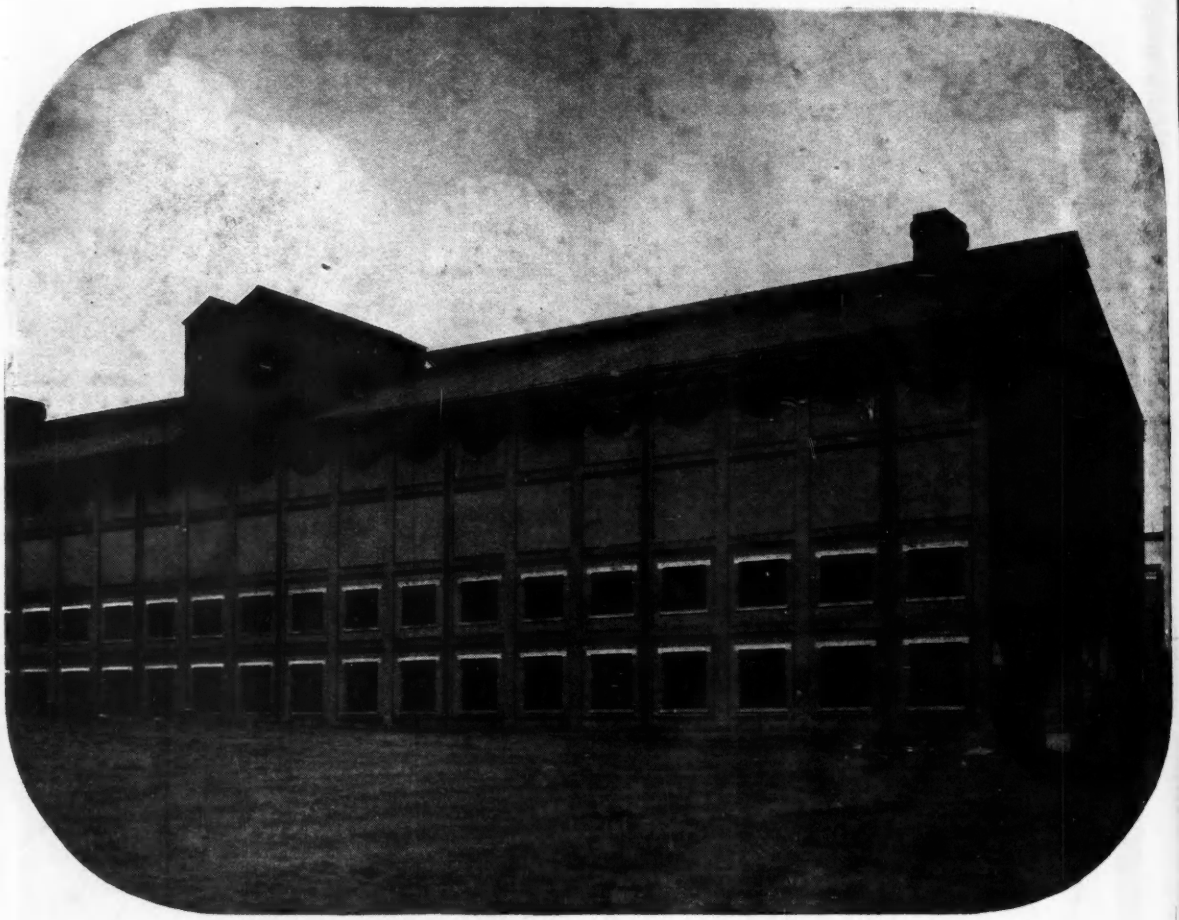

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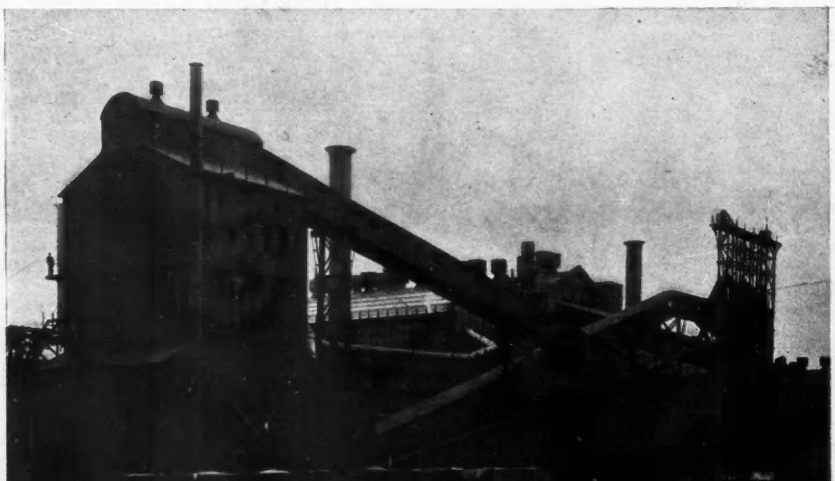

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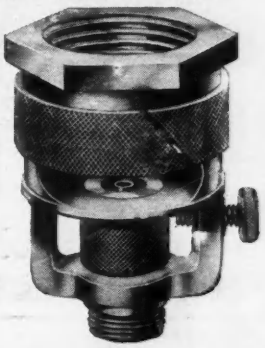

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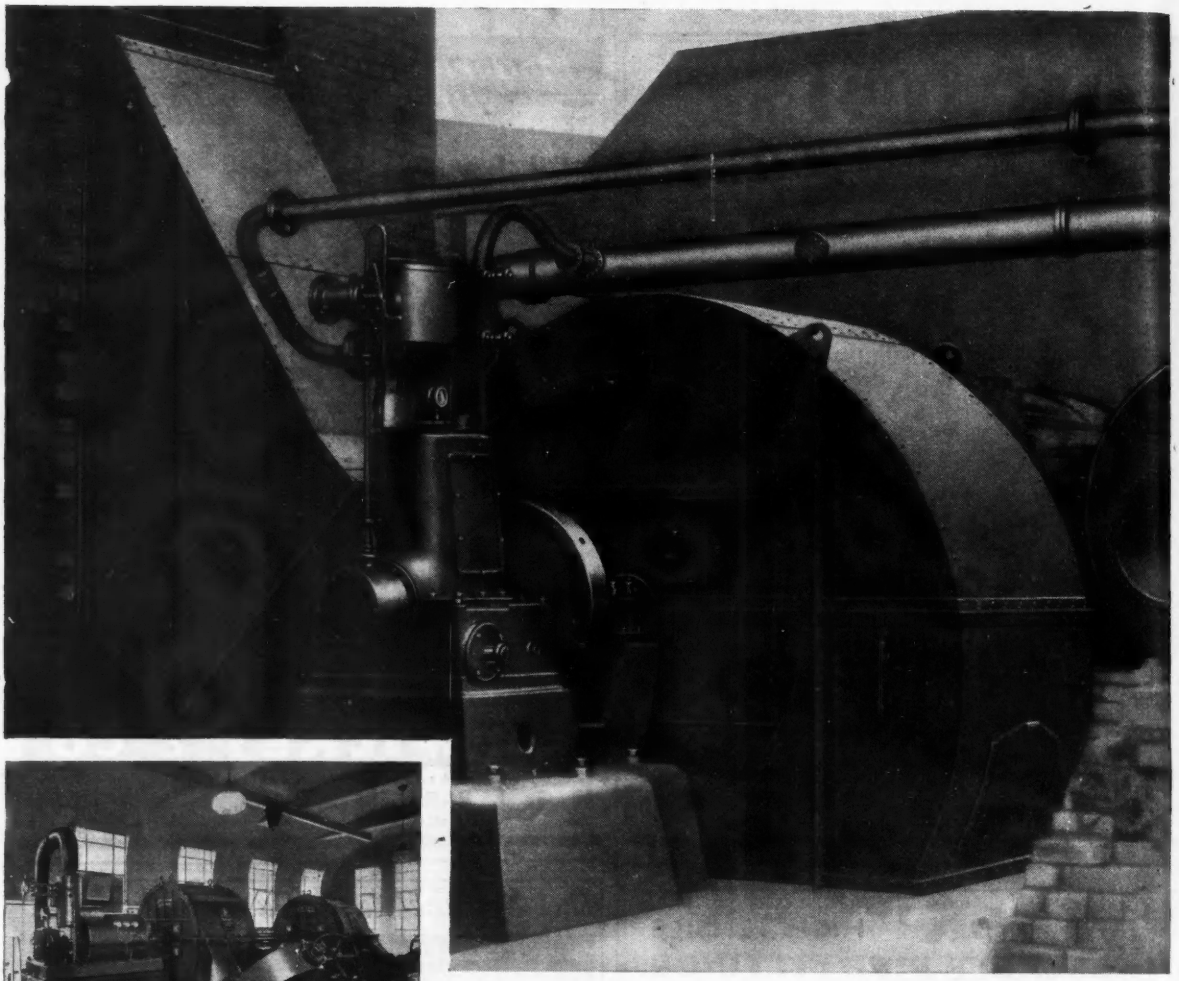
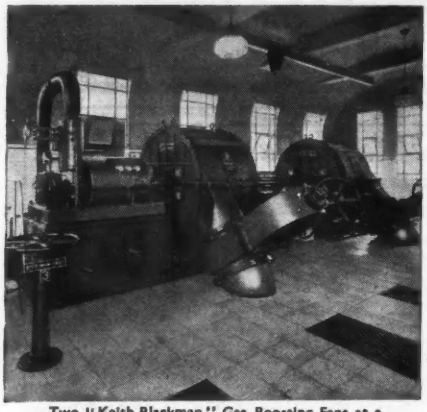


"Keith" Centrifugal Fan providing induced draught to boiler fires.



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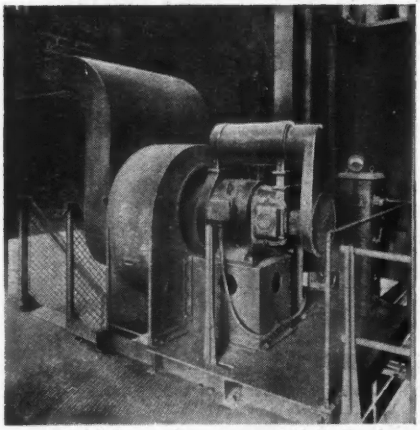
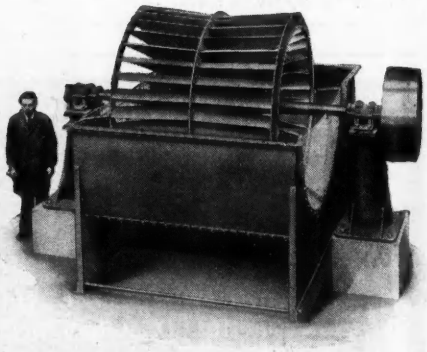


"Keith" Fan supplying air to a Cold Air Douche Plant at a Gas Works.

KEITH BLACKMAN FANS



Large belt-driven double-inlet "Keith" Fan with top casing removed.

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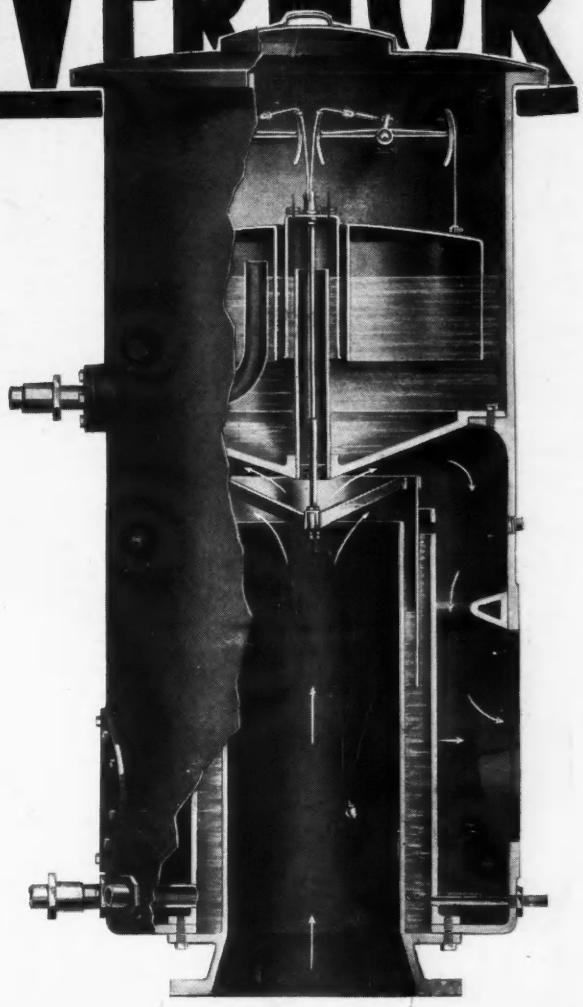

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